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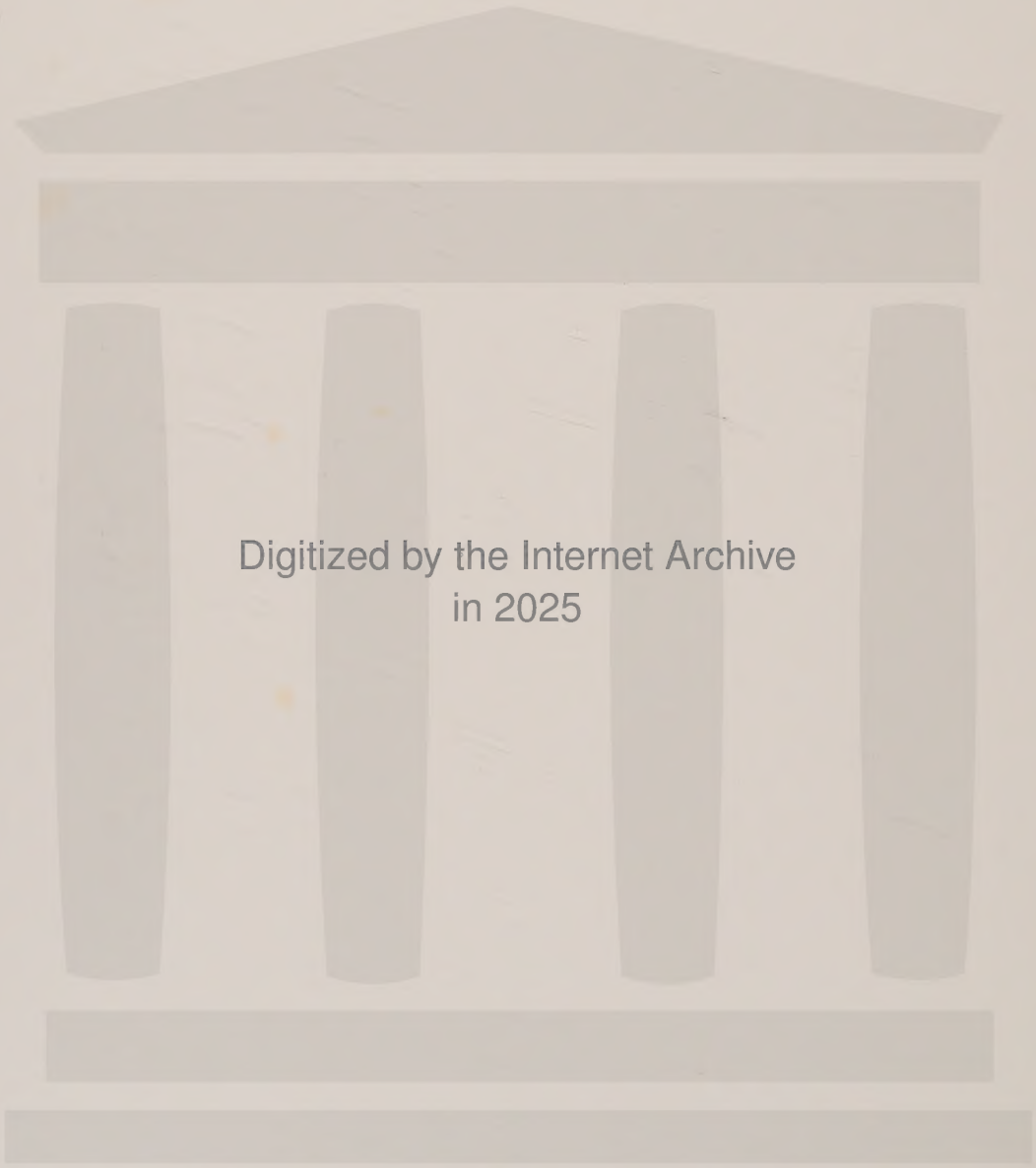
Tuna Survey in Waters off the Western Australian Coast during the period August 1973 to August 1974

BY

J. P. ROBINS

PERTH
WESTERN AUSTRALIA

1975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TUNA SURVEY IN WATERS OFF THE WESTERN AUSTRALIAN COAST DURING THE PERIOD AUGUST 1973 TO AUGUST 1974

BY

J.P. ROBINS

1975

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TUNA SURVEY IN WATERS OFF THE WESTERN AUSTRALIAN COAST DURING THE PERIOD AUGUST 1973 TO AUGUST 1974

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SUMMARY

This report lists the operations and data collected by F.B. "Western Star" whilst on survey in the attempt to determine what potential exists off the west and north-west coasts of Western Australia, for an industry based on tuna.

This survey took place between August 1973 and August 1974.

The listing includes data on (a) vessel operations by day and area (b) tuna and bait school sightings (c) length/weight data on tuna and other species caught by troll lines and purse seine net (d) purse seine sets (e) surface salinities and temperatures (f) bathythermograph casts.

I INTRODUCTION

In September 1972, Markwell Ross Fisheries Pty Ltd (a subsidiary fishing division of Q.U.F. Industries Ltd) approached the Western Australian Department of Fisheries and Fauna (now Department of Fisheries and Wildlife) for assistance in the development and carrying out of a purse seining programme using the 25m rock lobster vessel F.B. *Western Star*.

Negotiation and agreement was reached, with the objective to undertake and carry out an investigation into the feasibility of developing a purse seine fishery for tuna in Western Australian waters. The Department of Fisheries and Wildlife (Development Section) supplied, on loan, capital fishing equipment (purse seine net, Puretic power block and pursing winch), the Commonwealth Government through the Fisheries Development Trust Account, established under the Fishing Industry Act 1956, supplied money for operating costs of the vessel and Q.U.F. Industries Ltd bore the costs of converting F.B. *Western Star* to a purse seining vessel.

The sea programme commenced in late August 1973. Officers of the Department of Fisheries and Wildlife began a 12-month aerial survey for tuna off the west and north-west coasts of Western Australia in early August 1973. The results of this survey have been published in Report No. 17 to which reference should be made for information relating to tuna occurrence.

II CRUISE PLANNING

The first cruise planned was based, to some extent, on information gained from aerial surveys for tuna in this area during 1967-1968.

Subsequent cruise plans were dependent on prevailing weather conditions (e.g. vacation of the northern region during the 'cyclone season') and reports from the concurrent aerial survey. The aerial survey covered the region from Fremantle (32^{o}S lat.) to Admiralty Gulf (14^{o}S lat.) and return over a period of 6 to 7 days; the time interval between aerial surveys was approximately 5 weeks.

III DATA

1. COLLECTION:

   (a) Vessel Operation: Extracted from ship's log and a narrative log kept by the observing Departmental officer

   (b) Tuna and bait sightings: As above

   (c) Length (i.e. L.C.F. - snout to caudal fork) of fish measured in centimetres and weight measured in kilogrammes

   (d) Purse seine sets: Number of operations

      (i) Surface salinities: Measured in p.p.t. (‰) with Beckman salinometer; control checks of salinity samples made at Waterman Research Laboratories
      (ii) Surface temperatures: Reversing thermometer, bucket thermometer and thermograph recorder.

   (e) Bathythermograph casts: Made with Spilhaus B.T.

      (i) 200' Model - temperature in ^{o}F, depth in feet
      (ii) 273m Model - temperature in ^{o}C, depth in metres.

2. PRESENTATION:

   (a) Grid chart: Marsden grid of 10 minute by 10 minute intervals with number code for position reference; read latitude code number first e.g. Learmonth is situated in grid reference 6211.

   (b) Data for each item are presented by month

   (c) B.T. station number is shown after the cruise number, e.g. the fifth B.T. cast on cruise I is listed as 1/5.

IV LISTINGS

1(a) VESSEL OPERATIONS

AUGUST 1973

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
29	7.30	13.00	-		C
30	5.40	9.10	9.40	At anchor, fuelling from Charing Cross	C
31	8.70	13.00	2.30	At anchor for night	C
TOTAL	21.50	35.10	11.70		

SEPTEMBER

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
1	1.00	1.00	11.00	At anchor, sheltering, repairs to skiff	C
2	1.80	12.50	9.70	At anchor for night	C
3	2.00	11.25	10.75	At anchor for night	D
4	1.60	4.50	17.90	At anchor and net repairs	D
5	1.75	10.40	11.85	In port (Learmonth)	D
6	-	-	24.00	In port. Alteration & repairs to vessel	D
7	-	-	24.00	"	D
8	-	-	24.00	"	D
9	-	-	24.00	"	D
10	-	-	24.00	"	D
11	-	-	24.00	"	D
12	-	-	24.00	"	D

SEPTEMBER (cont)

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
13	-	-	24.00	In port. Alteration & repairs to vessel	D
14	-	-	24.00	"	D
15	-	-	24.00	"	D
16	-	-	24.00	"	D
17	-	-	24.00	"	D
18	-	-	24.00	"	D
19	2.25	2.75	19.00	At anchor. Alterations and repairs to vessel (Eva Is.)	D
20	5.50	3.75	14.75	At anchor. Engine repairs	D
21	9.67	13.00	1.33	At anchor (Port Hedland)	C
22	-	-	24.00	At anchor (Port Hedland). Adverse weather	C
23	5.50	11.00	7.50	"	C
24	6.00	13.00	5.00	At anchor. Adverse weather	C
25	-	-	24.00	"	C
26	0.50	8.75	14.75	At anchor. Fuelling and engine repairs	C
27	2.25	11.00	10.75	At anchor for night	C
28	2.50	13.25	8.25	"	C
29	-	11.00	13.00	"	C
30	-	-	24.00	At anchor (Point Samson). Adverse weather	C
TOTAL	42.32	127.15	550.53		

OCTOBER

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
1	-	8.00	16.00	At anchor. Adverse weather. Repairs to vessel	C
2	-	-	24.00	At anchor. Repairs to damaged vessel	C
3	3.00	13.00	8.00	At anchor. Fuelling	C
4	1.00	12.50	10.50	At anchor for night	C
5	-	-	24.00	At anchor. Alterations to net	C
6	-	-	24.00	"	C
7	-	-	24.00	"	C
8	1.50	13.50	9.00	At anchor for night	C
9	-	-	24.00	At anchor (Point Samson). Adverse weather	C
10	2.50	13.50	8.00	At anchor for night	C
11	6.00	13.50	4.50	At anchor for night	B
12	5.50	13.50	5.00	At anchor (Broome). Hydraulic failure	B
13	-	-	24.00	At anchor (Broome). Adverse weather. Engine repairs.	B
14	-	-	24.00	"	B
15	-	-	24.00	"	B
16	-	-	24.00	"	B
17	-	-	24.00	"	B
18	5.00	13.00	6.00	At anchor (Broome) for night	B
19	10.50	13.50			C
20	10.50	13.50			C
21	3.00	-	21.00	At anchor (Point Samson). Adverse weather	C
22	5.00	2.50	16.50	At anchor (Point Samson)	C
23	5.50	11.50	7.00	At anchor (Barrow Is.). Adverse weather	C
24	-	8.00	16.00	"	C

OCTOBER (cont)

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
25	-	-	24.00	At anchor (Barrow Is.). Adverse weather. Engine repairs	C
26	1.00	13.00	10.00	At anchor (Barrow Is.) for night	C
27	1.50	4.50	18.00	No data available	D
28	-	-	24.00	"	D
29	-	-	24.00	"	D
30	-	-	24.00	"	D
31	-	-	24.00		D
TOTAL	61.50	167.00	515.50		

NOVEMBER

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
1	-	-	24.00	No data available	-
2	-	-	24.00	No data available Returned to Learmonth	-
3	-	-	24.00	No data available	-
4	-	-	24.00	"	-
5	-	-	24.00	"	-
6	-	-	24.00	"	-
7	-	-	24.00	"	-
8	-	-	24.00	"	-
9	-	-	24.00	"	-
10	-	-	24.00	"	-
11	-	-	24.00	"	-
12	-	-	24.00	Returned Fremantle from Exmouth Gulf	E

NOVEMBER (cont)

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
13	-	-	24.00	Vessel refit. Training new crew	E
14	-	-	24.00	"	E
15	-	-	24.00	"	E
16	-	-	24.00	"	E
17	-	-	24.00	"	E
18	-	-	24.00	"	E
19	-	-	24.00	"	E
20	-	-	24.00	"	E
21	-	-	24.00	"	E
22	-	-	24.00	"	E
23	-	-	24.00	"	E
24	-	-	24.00	"	E
25	-	-	24.00	"	E
26	-	-	24.00	"	E
27	-	-	24.00	"	E
28	-	-	24.00	"	E
29	-	-	24.00	"	E
30	-	-	24.00	"	E
TOTAL	-	-	720.00		

DECEMBER

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
1	-	-	24.00	Vessel refit. Training crew	E
2	-	-	24.00	"	E
3	-	-	24.00	"	E
4	-	-	24.00	"	E
5	-	-	24.00	"	E
6	-	-	24.00	"	E

DECEMBER (cont)

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
7	-	-	24.00	Vessel refit. Training crew	E
8	-	-	24.00	"	E
9	-	-	24.00	"	E
10	-	-	24.00	"	E
11	-	-	24.00	"	E
12	-	-	24.00	"	E
13	-	-	24.00	"	E
14	-	-	24.00	"	E
15	-	-	24.00	"	E
16	-	-	24.00	"	E
17	-	-	24.00	"	E
18	-	-	24.00	"	E
19	-	-	24.00	"	E
20	-	-	24.00	"	E
21	-	-	24.00	"	E
22	-	-	24.00	"	E
23	-	-	24.00	"	E
24	-	-	24.00	"	E
25	-	-	24.00	"	E
26	-	-	24.00	"	E
27	-	-	24.00	"	E
28	-	-	24.00	"	E
29	-	-	24.00	"	E
30	-	-	24.00	"	E
31	-	-	24.00	"	E
TOTAL	-	-	744.00		

JANUARY 1974

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
1	-	-	24.00	Vessel refit. Training crew	E
2	-	-	24.00	"	E
3	-	-	24.00	"	E
4	-	11.25	12.75	At anchor for night	E
5	-	12.25	11.75	"	E
6	-	9.75	14.25	"	E
7	-	10.50	13.50	"	E
8	-	4.00	20.00	At anchor (Jurien Bay)	E
9	-	11.25	12.75	At anchor (Lancelin)	E
10	-	-	24.00	No data available	E
11	-	-	24.00	"	E
12	-	-	24.00	"	E
13	-	-	24.00	"	E
14	-	-	24.00	"	E
15	-	-	24.00	"	E
16	5.0	5.50	13.50	In port (Fremantle)	E
17	5.5	12.50	6.00	At anchor (Mangrove Is.)	E
18	-	4.00	20.00	At anchor (Mangrove Is.). Adverse weather	E
19	-	-	24.00	"	E
20	-	6.50	17.50	At anchor (Recruit Bay). Adverse weather	E
21	-	7.75	16.25	At anchor (Good Friday Bay). Adverse weather	E
22	-	9.00	15.00	At anchor (Good Friday Bay)	E
23	-	8.00	16.00	At anchor (Easter Group)	E
24	-	6.00	18.00	At anchor (Geraldton) for fuel and water	E
25	-	-	24.00	Standing by F.B. *Batavia Road*	E
26	-	-	24.00	At anchor (Geraldton) Adverse weather	E

JANUARY (cont)

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
27	-	-	24.00	At anchor (Geraldton) Adverse weather	E
28	-	13.00	11.00	At anchor (Jurien Bay)	E
29	1.50	13.00	9.50	In port (Fremantle)	E
30	-	-	24.00	"	E
31	-	-	24.00	"	E
TOTAL	12.00	144.25	587.75		

FEBRUARY

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
1	-	-	24.00	Obtaining and training three new crew members	E
2	-	-	24.00	"	E
3	-	-	24.00	"	E
4	-	-	24.00	"	E
5	-	11.50	12.50	At anchor for night	E
6	-	10.50	13.50	"	E
7	-	11.75	12.25	"	E
8	-	7.50	16.50	At anchor (Hamelin Bay)	E
9	-	7.75	16.25	At anchor (Castle Rock)	E
10	-	-	24.00	At anchor (Castle Rock). Adverse weather	E
11	-	8.00	16.00	At anchor	E
12	-	11.50	12.50	At Bunbury	E
13	-	10.50	13.50	At anchor for night	E

FEBRUARY (cont)

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
14	4.50	13.00	6.50	At anchor for night	E
15	5.50	7.00	11.50	In port (Fremantle)	E
16	-	-	24.00	In port (Fremantle) fuelling	E
17	-	-	24.00	"	E
18	-	12.00	12.00	In port (Fremantle)	E
19	-	-	24.00	"	E
20	-	-	24.00	"	E
21	-	-	24.00	"	E
22	-	-	24.00	"	E
23	8.00	13.00	3.00	At anchor	E
24	-	-	24.00	In port (Fremantle)	E
25	3.00	11.25	9.75	-	E
26	-	-	24.00	In port (Fremantle)	E
27	-	-	24.00	"	E
28	-	-	24.00	"	E
TOTAL	21.00	135.25	515.75		

MARCH

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
1	-	-	24.00	In port (Fremantle)	E
2	-	-	24.00	"	E
3	-	-	24.00	"	E
4	-	-	24.00	"	E
5	-	-	24.00	"	E
6	-	-	24.00	"	E
7	-	-	24.00	"	E
8	-	-	24.00	"	E
9	-	-	24.00	"	E
10	-	-	24.00	"	E

MARCH (cont)

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
11	-	-	24.00	In port (Fremantle)	E
12	5.00	2.00	17.00	"	E
13	8.75	13.00	2.25	At anchor (Eagle Bay)	E
14	-	10.50	13.50	At anchor (Canal Rocks	E
15	3.50	13.00	7.50	In port (Fremantle)	E
16	-	-	24.00	No data available	E
17	-	-	24.00	"	E
18	3.00	13.00	8.00	At anchor (Eagle Bay)	E
19	-	12.50	11.50	At anchor (Canal Rocks)	E
20	-	3.00	21.00	At anchor (Canal Rocks). Adverse weather	E
21	5.00	12.50	6.50	At anchor (Canal Rocks)	E
22	7.00	13.00	4.00	"	E
23	5.00	13.50	5.50	"	E
24	-	4.00	20.00	In port (Fremantle)	E
25	-	-	24.00	"	E
26	5.00	14.00	5.00	"	E
27	6.00	7.50	10.50	"	E
28	-	-	24.00	No data available	E
29	-	-	24.00	"	E
30	-	-	24.00	"	E
31	-	-	24.00	"	E
TOTAL	48.25	131.50	564.25		

APRIL

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
1	-	-	24.00	No data available	E
2	-	-	24.00	"	E
3	-	-	24.00	"	E
4	-	-	24.00	"	E
5	-	-	24.00	"	E
6	3.00	8.00	13.00	At anchor (Lancelin)	E
7	8.00	13.00	3.00	"	E
8	-	-	24.00	At anchor (Mangrove Is.). Adverse weather	E
9	1.75	11.50	10.75	At anchor (Rat Is.)	E
10	5.00	12.00	7.00	"	E
11	11.00	13.00	-		E
12	11.00	13.00	-		D
13	3.00	-	21.00	At anchor (Learmonth)	D
14	-	-	24.00	"	D
15	2.25	13.00	8.75		D
16	-	-	24.00	At anchor (Learmonth). Fuelling and watering	D
17	4.00	11.25	8.75	At anchor ("Y" Islet) Adverse weather	D
18	-	2.83	21.17	At anchor (Learmonth). Adverse weather	D
19	-	5.17	18.83	At anchor (Vlaming Head)	D
20	-	11.50	12.50	"	D
21	3.17	13.00	7.83	"	D
22	2.92	12.00	9.08	At anchor (Learmonth)	D
23	4.25	-	19.75	At anchor (Learmonth). Fuel and water. Adverse weather	D
24	0.75	4.08	19.17	At anchor (Vlaming Head). Adverse weather	D
25	0.83	12.17	11.00	"	D

APRIL (cont)

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
26	6.50	12.00	5.50	At anchor (Vlaming Head). Adverse weather	D
27	6.50	11.42	6.08	"	D
28	-	10.50	13.50	"	D
29	-	11.92	12.08	"	D
30	-	-	24.00	"	D
TOTAL	73.92	201.34	444.74		

MAY

DATE	HOURS STEAMING NIGHT	HOURS STEAMING DAY	HOURS IN PORT OR ANCHORED	REASON	AREA
1	-	3.08	20.92	At anchor ("Y" Islet). Adverse weather	D
2	5.58	12.00	6.42	At anchor (Learmonth)	D
3	-	-	24.00	At anchor (Learmonth). Fuel and water	D
4	-	-	24.00	At anchor. Met spotter plane	D
5	2.17	2.67	19.16	Taking on stores. At anchor (Vlaming Head)	D
6	-	11.42	12.58	At anchor (Vlaming Head)	D
7	4.00	11.08	8.92	At anchor (Learmonth)	D

MAY (cont)

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
8	-	-	24.00	At anchor (Learmonth). Stores, fuel and water. Off loaded tuna	D
9	-	3.50	20.50	At anchor ("Y" Islet). Adverse weather	D
10	-	3.00	21.00	At anchor (Learmonth). Adverse weather	D
11	-	4.00	20.00	At anchor (Vlaming Head)	D
12	3.50	10.08	10.42	"	D
13	-	10.58	13.42	"	D
14	2.42	10.17	11.41	"	D
15	2.25	10.92	10.83	"	D
16	6.33	12.00	5.67	"	D
17	0.75	-	23.25	At anchor (Learmonth). Crew on leave	D
18	-	-	24.00	Crew leave and engine repairs	D
19	-	-	24.00	"	D
20	-	-	24.00	"	D
21	-	-	24.00	"	D
22	-	-	24.00	"	D
23	-	-	24.00	"	D
24	-	-	24.00	"	D
25	-	-	24.00	"	D
26	-	-	24.00	"	D
27	-	-	24.00	"	D
28	-	-	24.00	"	D
29	-	-	24.00	Crew leave and engine repairs. Fuel and water	D
30	0.50	1.25	22.25	Stores and fuel. At anchor ("Y" Islet)	D

MAY (cont)

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
31	6.50	12.00	5.50	At anchor ("Y" Islet)	D
TOTAL	34.00	117.75	592.25		

JUNE

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
1	9.25	12.00	1.75	At anchor (Vlaming Head)	D
2	5.50	11.75	6.75	"	D
3	6.50	11.17	6.33	At anchor (S.W. of Point Cloates)	D
4	1.25	9.00	13.75	At anchor (Maud Landing). Adverse weather	D
5	-	2.50	21.50	"	D
6	4.50	10.75	8.75	At anchor (Learmonth)	D
7	5.50	-	18.50	At anchor (Learmonth). Fuel, water and stores	D
8	6.50	11.75	5.75	At anchor (S.W. of Point Cloates)	D
9	5.50	11.75	6.75	"	D
10	12.00	12.00	-		D
11	6.50	9.17	8.33	At anchor (Rankin Bank)	C
12	5.50	11.33	7.17	"	C
13	6.50	6.25	11.25	At anchor (Learmonth). Met spotter plane	D

JUNE (cont)

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
14	0.25	2.17	21.58	Taking water and stores. At anchor (Exmouth town)	D
15	-	6.08	17.92	At anchor (Vlaming Head). Engine repairs	D
16	0.83	11.50	11.67	At anchor (Maud Landing)	D
17	-	9.75	14.25	"	D
18	-	-	24.00	At anchor (Maud Landing). Adverse weather	D
19	-	-	24.00	"	D
20	5.50	1.97	16.53	"	D
21	7.50	3.62	13.88	At Carnarvon for fuel and water. At anchor (Bernier Is.)	D
22	-	6.50	17.50	At anchor (N.E. of St. Cricq Lighthouse)	D
23	6.50	12.00	5.50	"	D
24	12.00	12.00	-		D
25	12.00	12.00	-		D
26	10.58	12.00	1.42	At anchor (S.W. of N.W. Cape)	D
27	5.50	11.83	6.67	"	D
28	0.25	-	23.75	At anchor (Learmonth). Engine repairs, fuel and water	D
29	3.00	1.50	19.50	Engine repairs. At anchor (Vlaming Head)	D
30	5.50	12.00	6.50	At anchor (Vlaming Head)	D
TOTAL	144.41	234.34	341.25		

JULY

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
1	12.00	12.00			D
2	3.50	-	20.50	At anchor (Learmonth). Engine repairs	D
3	-	-	24.00	"	D
4	-	-	24.00	"	D
5	-	-	24.00	"	D
6	-	-	24.00	"	D
7	-	-	24.00	"	D
8	-	-	24.00	"	D
9	-	-	24.00	"	D
10	-	-	24.00	"	D
11	-	-	24.00	"	D
12	-	-	24.00	"	D
13	-	-	24.00	"	D
14	-	-	24.00	"	D
15	-	-	24.00	"	D
16	-	-	24.00	"	D
17	-	-	24.00	"	D
18	-	-	24.00	"	D
19	-	-	24.00	"	D
20	5.50	3.00	15.50	At anchor (Learmonth)	D
21	12.00	12.00	-		C
22	12.00	12.00	-		C
23	-	2.25	21.75	At Port Hedland	C
24	-	-	24.00	At Port Hedland. Fuel and water	C
25	9.00	12.00	3.00	At Port Hedland	C
26	12.00	12.00	-		B
27	12.00	12.00	-		A
28	6.50	10.50	7.00	At anchor (W.N.W. of Broome).(Grid 3452)	A
29	7.00	12.00	5.00	"	A
30	6.50	4.25	13.25	At anchor (Broome)	B
31	-	-	24.00	At anchor (Broome). Fuel and water	B
TOTAL	98.00	104.00	542.00		

AUGUST

DATE	HOURS STEAMING		HOURS IN PORT OR ANCHORED	REASON	AREA
	NIGHT	DAY			
1	5.50	6.58	11.92	At anchor (Broome)	B
2	12.00	12.00	-		A
3	12.00	12.00	-		B
4	6.50	5.75	11.75	At anchor (Mermaid Reef)	A
5	5.50	7.00	11.50	"	B
6	12.00	12.00	-		C
7	3.50	1.92	18.58	At anchor off Port Hedland	C
8	3.00	12.00	9.00	At anchor (Glomar Shoal)	C
9	5.50	12.00	6.50	"	C
10	12.00	12.00	-		C
11	6.50	10.25	7.25	At anchor (Learmonth)	D
12	-	-	24.00	At anchor (Learmonth). Adverse weather	D
13	-	-	24.00	"	D
14	4.58	5.08	14.34	At anchor (Onslow)	D
15	5.50	9.33	9.17	At anchor (Onslow). Met spotter plane	C
16	10.50	12.00	1.50	At anchor (N. of Port Hedland)(Grid 4739)	C
17	5.50	12.25	6.25	"	C
18	11.50	12.50	-		C
19	6.00	5.00	13.00	At anchor (Learmonth)	D
TOTAL	127.58	159.66	168.76		

1(b) SUMMARY OF VESSEL OPERATION

MONTH	NO. OF DAYS WORKED	HRS STEAMING AND SEARCHING Night	HRS STEAMING AND SEARCHING Day	HOURS AT ANCHOR	
AUG '73	3	21.50	35.10	11.70	
SEP	14	42.32	127.15	214.53	
OCT	16	61.50	167.00	155.50	
NOV	0	0	0	0	Not on survey
DEC	0	0	0	0	"
JAN '74	16	12.00	144.25	227.75	
FEB	15	21.00	135.25	155.75	
MAR	13	48.25	131.50	296.25	
APR	19	73.92	201.34	252.74	
MAY	15	34.00	117.75	209.00	
JUN	27	144.41	234.34	296.50	
JUL	9	98.00	104.00	43.75	
AUG	17	127.58	159.66	116.76	
TOTAL	164	684.48	1557.34	*1980.23	

*Includes anchorage time due to bad weather

2(a) TUNA AND BAIT SCHOOL SIGHTINGS

AUGUST 1973 — KEY TO SPECIES: M.T. = Mackerel Tuna. S.T. = Striped Tuna S.B.F. = Southern Bluefin Tuna. N.F.B. = Northern Bluefin Tuna. Y.F. = Yellowfin Tuna

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.1	29	0805	5911	65	-	S	S	1	D
	29	1145	5613	100+	Bait	-	L	1	D
	29	1530	5516	36	M.T.	S	S	1	D
	29	1625	5517	12	-	S	S	1	C

SEPTEMBER

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.1	2	1205	5518	11	M.T.	S	S	1	C
	2	1235	5517	12	-	S	S	2	C
	2	1700	5319	20	-	S	S	1	C
	2	1715	5319	15	-	S	S	1	C
	3	0740	5319	10	-	S	S	4	C
	3	0750	5319	10	-	S	S	2	C
	3	1545	5714	80	-	S	M	1	D
	3	1735	5713	90	-	S	L	1	D
	3	1745	5713	90	-	S	S	4	D
	3	1800	5812	90	-	S	S	12	D
	4	1445	5911	-	-	S	S	1	D
	4	1500	5911	40	-	S	S	2	D
	4	1540	5910	80	-	S	S	1	D
	5	0825	5911	10	-	S	S	1	D
	5	0940	6012	11	-	M	S	1	D
	5	1003	6012	11	-	S	S	2	D
	5	1500	6012	11	-	M	S	2	D
	5	1515	6012	11	-	M	s	3	D
	5	1535	6012	11	-	M	S	2	D
	5	1815	6112	8	Bait	-	S	2	D
	21	1110	5029	17	-	S	L	1	C
	21	1220	5030	20	M.T.	M	L	1	C
	26	1130	5122	24	-	S	S	1	C
	26	1530	5125	20	-	S	S	1	C

SEPTEMBER (cont)

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.1	27	0930	5127	5	-	S	S	10	C
	27	1330	4829	25	-	S	S	1	C
	27	1425	4829	25	M.T.	M	M	1	C
	28	0845	4829	25	-	M	M	1	C
	28	1120	4829	25	-	S	S	10	C
	28	1425	4830	25	-	M	L	1	C

OCTOBER

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.1	3	1215	4929	25	-	S	S	10	C
	3	1430	4929	25	S.T.	S	L	1	C
	3	1630	4929	23	M.T.	S	S	1	C
	3	1800	4928	25	S.T.	S	S	1	C
	4	1100	4831	28	-	S	S	25	C
	4	1430	4933	23	-	S	L	3	C
	8	0800	5028	22	M.T.	S	S	1	C
	8	1130	4928	25	M.T.	S	S	1	C
	10	1000	4735	25	M.T.	S	S	5	C
	11	1600	4141	55	S.B.F.	S	L	1	B
	11	1630	4142	55	S.B.F.	S	L	5	B
	19	1500	4340	40	-	S	S	5	B
	19	1830	4340	40	N.B.F.	S	L	1	B
	23	1600	5219	14	M.T.	M	S	6	C

JANUARY 1974

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.2	7	0545	1416	20	-	S	S	1	E
W.S.3	17	0800	0713	-	-	S	S	1	E
	22	1100	0108	-	-	S	S	1	E
	22	1200	0108	-	-	S	S	5	E
	22	1300	0107	100	-	S	L	1	E

FEBRUARY

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.4	15	0800	2217	-	S.T.	S	L	1	E
W.S.5	23	0745	2114	-	Bait	-	S	1	E
	23	1800	2217	-	-	S	S	1	E
	25	0915	2119	-	Bait	-	L	1	E
	25	1230	2118	-	S.T.	S	L	1	E

MARCH

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.6	12	1400	2813	-	-	S	S	1	E
	12	1510	2813	-	S.T.	M	M	1	E
	12	1830	2814	-	Bait	-	L	20	E
	15	1030	2614	-	-	L	S	1	E
W.S.7	19	1145	2714	-	S.T.	S	S	1	E
	19	1450	2715	-	S.T.	S	S	2	E
	19	1530	2815	-	Bait	-	L	3	E
	21	1500	3014	-	-	S	S	1	E
	22	0830	3113	-	-	S	S	1	E

MARCH (cont)

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.7	22	1130	3113	-	-	L	S	1	E
	22	1300	3113	-	-	S	L	1	E
	22	1600	3014	-	S.B.F.	S	L	1	E
	23	1100	2913	-	-	S	M	1	E
W.S.8	26	0915	2117	-	-	S	L	1	E

APRIL

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.9	7	1415	0712	-	S.T.	M	L	2	E
	9	1330	0008	-	S.T.	S	M	1	E
	12	1800	6208	-	-	S	S	1	D
	15	0800	5912	-	-	S	S	2	D
	15	0915	5912	-	-	S	S	1	D
	15	0945	5811	-	-	S	S	3	D
	17	0755	5910	120	-	S	S	1	D
	17	1035	6010	60	S.T.	S	L	1	D
	17	1050	6010	48	S.T.	S	L	1	D
	17	1100	6010	48	S.T.	S	L	3	D
	19	(1700	5912	12	M.T.	M	L	2	D
	19	(1700	5912	12	M.T.	M	M	1	D
	19	1721	5912	12	-	M	S	1	D
	20	(0715	5911	14	-	S	S	2	D
	20	(0715	5911	14	-	S	M	4	D
	20	0730	5911	20	-	S	L	1	D
	20	0745	5911	23	-	S	M	1	D
	20	0810	5911	25	-	S	L	1	D
	20	0835	5910	50	S.T.	S	M	1	D
	20	1355	6109	45	M.T.	S	M	1	D
	20	(1400	6109	50	S.T.	S	M	1	D
	20	(1400	6109	50	S.T.	S	S	1	D
	20	1515	5910	80	-	S	M	1	D
	20	1530	5910	70	-	S	S	1	D
	20	1615	5910	60	S.T.	S	S	3	D

APRIL (cont)

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.9	20	1645	5910	55	S.T.	S	L	2	D
	21	(0625	5910	45	Bait		S	2	D
	21	(0625	5910	45	Bait	-	M	2	D
	21	0645	5910	70	S.T.	S	L	1	D
	21	0700	5910	60	S.T.	S	M	3	D
	21	1220	5807	-	-	S	L	1	D
	22	0650	5910	60	S.T.	S	S	1	D
	22	0700	5910	70	S.T.	S	M	2	D
	22	0710	5910	70	S.T.	S	M	1	D
	22	0755	5910	41	S.T.	S	L	1	D
	22	0800	5910	41	S.T.	S	M	1	D
	24	0700	5910	28	-	S	S	1	D
	24	1000	5911	25	-	S	L	1	D
	25	1045	6010	60	S.T.	S	M	1	D
	25	1110	6010	60	-	S	M	1	D
	25	1125	6010	60	-	S	M	3	D
	25	1700	6010	100	-	S	S	1	D
	26	0835	6009	$\frac{\cdot}{320}$	-	S	M	1	D
	26	0945	6009	$\frac{\cdot}{320}$	-	M	M	1	D
	26	1055	5907	-	-	S	S	1	D
	27	1400	5910	80	-	S	S	2	D
	27	1435	5910	90	-	S	L	1	D
	27	1455	5811	95	-	S	L	3	D
	27	1545	5811	110	-	S	M	1	D
	27	1555	5811	100	-	S	L	1	D
	27	1625	5811	100	-	S	S	1	D
	27	1630	5811	100	-	S	M	2	D
	28	0745	5911	50	-	S	M	1	D
	28	0800	5911	60	-	S	S	1	D
	28	0915	5911	104	-	S	L	1	D
	28	0925	5811	100	S.B.F.	S	S	1	D
	28	1440	5911	90	-	S	L	1	D
	28	1500	5911	75	-	S	M	1	D
	28	1510	5911	75	-	S	S	1	D
	28	(1530	5811	80	-	S	S	2	D
	28	(1530	5811	80	-	S	M	1	D
	28	1620	5911	30	-	S	S	1	D
	29	0945	5711	90	S.T.	M	L	1	D
	29	1725	5912	15	S.T.	S	S	1	D

MAY

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.9	1	(1330	5912	-	-	S	S	2	D
	1	(1330	5912	-	-	S	L	1	D
	2	0900	5713	90	-	S	L	1	D
	2	0915	5713	90	S.T.	S	L	1	D
	2	1405	5712	90	-	S	S	1	D
	2	1445	5713	65	-	S	S	1	D
	2	1505	5713	65	-	S	S	2	D
	2	1530	5713	80	-	S	S	2	D
	6	0850	5811	-	-	S	S	1	D
	6	1045	5910	90	-	S	S	1	D
	6	1100	5910	90	-	S	L	1	D
	6	(1500	5910	80	S.T.	S	S	2	D
	6	(1500	5910	80	S.T.	S	M	2	D
	6	1655	5910	80	-	S	S	1	D
	7	0740	5911	17	-	S	S	1	D
	7	0850	5910	70	S.T.	S	S	1	D
	7	1015	6010	65	-	S	S	1	D
	7	1050	6010	70	-	S	L	1	D
	7	1300	6009	80	-	S	S	1	D
	7	1610	6010	70	S.T.	S	S	1	D
	7	1700	5910	70	S.T.	S	S	1	D
	12	1520	5910	-	S.T.	S	S	1	D
	14	1640	6109	290	-	S	S	1	D
	14	1650	6109	280	-	S	L	1	D
	14	1740	6109	-	-	S	L	1	D
	15	0855	5811	105	-	S	S	1	D
	15	1340	5811	80	-	S	S	4	D
	15	1455	5910	65	S.T.	S	M	1	D
	16	0800	5712	100	-	S	S	1	D
	16	0815	5712	100	-	M	L	1	D
	16	0910	5712	160	-	S	M	1	D
	16	0920	5712	120	-	S	L	1	D
	16	1105	5612	170	-	S	S	1	D
	16	1555	5513	-	Y.F.	S	M	1	D
W.S.10	31	0825	5911	20	-	S	S	1	D
	31	0910	5910	-	-	S	S	1	D
	31	1435	5513	160	-	S	S	1	D
	31	1630	5614	-	-	S	S	4	D

JUNE

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.10	2	1120	6009	180	-	M	S	1	D
	2	1440	6109	150	-	S	S	1	D
	2	1530	6009	60	-	S	S	1	D
	2	1700	5910	230	-	S	S	1	D
	3	1130	6109	90	-	S	S	3	D
	3	1235	6209	240	-	S	S	1	D
	3	1635	6508	-	-	M	M	1	D
	4	1000	6507	-	-	S	L	1	D
	5	0815	6708	36	-	S	M	1	D
	6	0910	6608	38	-	S	L	1	D
	6	1610	6009	80	-	S	L	1	D
	6	1700	6010	-	-	S	S	1	D
	8	1255	6807	50	Bait	-	S	1	D
	11	1115	4718	130	-	S	L	1	C
	11	1150	4719	160	-	S	S	1	C
	11	1535	4720	15	-	M	M	1	C
	12	0850	4719	95	S.T.	S	M	1	C
	12	1230	4716	$\frac{\cdot}{320}$	-	S	S	1	D
	12	1550	5117	-	-	S	S	1	C
	12	1600	5117	-	-	S	S	1	C
	12	1645	5116	-	-	S	L	4	D
W.S.11	16	1010	6109	50	S.T.	S	S	1	D
	16	1025	6209	120	S.T.	S	L	1	D
	16	1600	6507	107	-	S	S	1	D
	16	1620	6607	-	S.T.	S	S	1	D
	24	1640	7598	$\frac{\cdot}{320}$	-	S	S	1	D
	26	1200	6204	$\frac{\cdot}{320}$	S.T.	M	S	1	D
	26	1230	6204	$\frac{\cdot}{320}$	-	L	S	1	D
	27	1000	6107	$\frac{\cdot}{320}$	-	M	M	1	D
	27	1525	6007	$\frac{\cdot}{320}$	-	S	S	1	D

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JULY

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.12	21	1130	5224	-	-	S	L	1	C
	25	1315	4238	50	M.T.	S	M	1	C
	25	1630	4140	72	-	S	S	1	B
	26	0715	3942	74	-	M	S	2	B
	26	0845	3843	74	-	S	S	1	B
	26	(1430	3746	72	-	M	S	1	B
	26	(1430	3746	72	-	S	M	1	B
	26	1635	3746	72	-	S	S	1	B
	26	1720	3747	73	-	S	S	1	B
	27	0700	3647	$\frac{\cdot}{80}$	-	S	S	1	B
	27	0725	3647	$\frac{\cdot}{80}$	-	S	S	1	B
	27	0730	3647	$\frac{\cdot}{80}$	-	S	S	5	B
	27	0800	3648	$\frac{\cdot}{80}$	-	S	S	3	B
	27	0925	3648	$\frac{\cdot}{80}$	-	S	S	1	B
	27	1030	3647	75	-	S	S	5	B
	27	1130	3650	77	-	S	L	1	B
	27	1230	3550	77	-	S	M	1	A
	27	1245	3550	77	M.T.	M	M	2	A
	27	1400	3450	100	-	S	S	1	A
	27	1500	3351	$\frac{\cdot}{80}$	-	S	S	3	A
	27	1700	3252	78	-	S	L	12	A
	28	0630	3352	62	-	S	L	1	A
	28	1545	3452	52	Bait	-	M	1	A
	28	1600	3452	54	Bait	-	S	1	A
	28	(1653	3452	53	Bait	-	M	1	A
		(1653	3452	53	Bait	-	L	1	A
	29	0805	3352	69	-	S	M	1	A
	29	1430	3051	84	-	S	M	1	A

AUGUST

CRUISE NO.	DATE	TIME	GRID	DEPTH FATHOMS	SPECIES	FISH SIZE	SCHOOL SIZE	NO. OF SCHOOLS	AREA
W.S.12	1	(1440	3759	15	-	S	S	1	B
	1	(1440	3759	15	-	S	L	3	B
	1	1630	3658	15	-	S	S	1	B
	2	(1000	3452	62	-	S	M	3	A
	2	(1000	3452	62	-	S	L	4	A
	2	1045	3452	65	-	S	S	3	A
	2	1100	3452	64	-	S	S	3	A
	2	1110	3452	64	-	S	L	1	A
	2	1230	3351	80	-	S	S	2	A
	2	1515	3549	94	-	S	S	1	A
	2	1645	3648	80	-	S	S	2	B
	2	1700	3748	82	-	S	S	1	B
	3	0630	3748	82	-	S	S	1	B
	3	0645	3748	82	-	S	S	3	B
	3	0745	3747	77	-	S	S	1	B
	3	1330	3443	150	-	S	S	1	B
	6	1130	3835	-	-	S	S	1	C
	6	1750	4435	66	Bait	-	M	6	C
	8	1500	4732	29	-	S	M	1	C
	9	0700	4627	20	-	S	L	1	C
	10	1330	4621	150	-	S	S	1	C
	10	(1500	4621	140	-	S	S	2	C
	10	(1500	4621	140	-	S	M	1	C
	15	1230	5619	8	Bait	-	S	3	C
	15	(1330	5619	8	M.T.	S	S	6	C
	15	(1330	5619	8	M.T.	S	L	4	C
	17	0900	4438	32	M.T.	M	S	1	C
	17	1100	4330	34	M.T.	M	L	4	B
	17	1140	4440	33	M.T.	M	L	1	B
	17	(1200	4440	32	M.T.	S	M	2	B
	17	(1200	4440	32	M.T.	S	L	1	B
	18	1250	5222	18	-	S	S	1	C
	18	1255	5222	18	-	S	L	1	C

2(b) TUNA AND BAIT SIGHTINGS BY MONTHS BY FISH AND SCHOOL SIZE

AUG 73

Fish Size	School Size S	School Size M	School Size L
S	3	–	–
M	–	–	–
L	–	–	–
Bait	–	–	1

SEPT 73

Fish Size	School Size S	School Size M	School Size L
S	57	1	2
M	8	2	2
L	–	–	–
Bait	2	–	–

OCT 73

Fish Size	School Size S	School Size M	School Size L
S	49	–	11
M	6	–	–
L	–	–	–
Bait	–	–	–

JAN 74

Fish Size	School Size S	School Size M	School Size L
S	8	–	1
M	–	–	–
L	–	–	–
Bait	–	–	–

FEB 74

Fish Size	School Size S	School Size M	School Size L
S	1	–	2
M	–	–	–
L	–	–	–
Bait	1	–	1

MAR 74

Fish Size	School Size S	School Size M	School Size L
S	6	1	3
M	–	1	–
L	2	–	–
Bait	–	–	23

2(b) Continued

APR 74

Fish Size	School Size S	School Size M	School Size L
S	29	29	20
M	1	2	5
L	–	–	–
Bait	2	2	–

MAY 74

Fish Size	School Size S	School Size M	School Size L
S	35	5	8
M	–	–	1
L	–	–	–
Bait	–	–	–

JUNE 74

Fish Size	School Size S	School Size M	School Size L
S	17	2	9
M	2	3	–
L	1	–	–
Bait	1	–	–

JULY 74

Fish Size	School Size S	School Size M	School Size L
S	24	5	15
M	3	2	–
L	–	–	–
Bait	1	2	1

AUG 74

Fish Size	School Size S	School Size M	School Size L
S	31	7	15
M	1	–	5
L	–	–	–
Bait	3	6	–

TOTAL

Fish Size	School Size S	School Size M	School Size L
S	260	50	86
M	21	10	13
L	3	–	–
Bait	10	10	26

2(c) TUNA AND BAIT SIGHTINGS BY AREA
BY FISH AND SCHOOL SIZE

AREA A

Fish Size	School Size S	School Size M	School Size L
S	13	6	18
M	-	2	-
L	-	-	-
Bait	1	2	1

AREA B

Fish Size	School Size S	School Size M	School Size L
S	36	3	12
M	3	-	5
L	-	-	-
Bait	-	-	-

AREA C

Fish Size	School Size S	School Size M	School Size L
S	93	4	13
M	7	3	2
L	-	-	-
Bait	3	6	-

AREA D

Fish Size	School Size S	School Size M	School Size L
S	103	35	37
M	11	4	4
L	1	-	-
Bait	5	2	1

AREA E

Fish Size	School Size S	School Size M	School Size L
S	15	2	6
M	-	1	2
L	2	-	-
Bait	1	-	24

TOTAL

Fish Size	School Size S	School Size M	School Size L
S	260	50	86
M	21	10	13
L	3	-	-
Bait	10	10	26

3. LENGTH/WEIGHT MEASUREMENTS

AUGUST 1973

MACKEREL TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.1	30	0940	4925	-	-	C	Trolled

NORTHERN BLUEFIN TUNA

W.S.1	30	0940	4925	-	-	C	Trolled

SEPTEMBER

MACKEREL TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.1	21	1550	5033	72	4.5	C	Trolled
	21	1550	5033	73	5.4	C	"
	21	1730	5035	72	4.5	C	"
	21	1730	5035	74	5.0	C	"
	23	1220	4736	70	5.0	C	"
	23	1220	4736	72	5.2	C	"
	23	1220	4736	74	5.2	C	"
	27	0900	5127	72	4.0	C	"
	27	1500	4829	71	5.2	C	Purse seined
	27	1500	4829	74	6.1	C	"
	27	1500	4829	71	5.0	C	"
	27	1500	4829	74	6.4	C	"
	27	1500	4829	73	6.0	C	"
	27	1500	4829	73	6.0	C	"
	27	1500	4829	71	5.0	C	"
	27	1500	4829	72	5.4	C	"
	27	1500	4829	71	5.2	C	"
	27	1500	4829	71	5.0	C	"

SEPTEMBER (cont)

MACKEREL TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.I	27	1500	4829	61	-	C	Purse seined
	27	1500	4829	61	-	C	"
	27	1500	4829	61	-	C	"
	27	1500	4829	62	-	C	"
	27	1500	4829	62	-	C	"
	27	1500	4829	62	-	C	"
	27	1500	4829	62	-	C	"
	27	1500	4829	65	-	C	"
	27	1500	4829	65	-	C	"
	27	1500	4829	65	-	C	"
	27	1500	4829	66	-	C	"
	27	1500	4829	67	-	C	"
	27	1500	4829	67	-	C	"
	27	1500	4829	67	-	C	"
	27	1500	4829	68	-	C	"
	27	1500	4829	68	-	C	"
	27	1500	4829	69	-	C	"
	27	1500	4829	69	-	C	"
	27	1500	4829	69	-	C	"
	27	1500	4829	69	-	C	"
	27	1500	4829	69	-	C	"
	27	1500	4829	69	-	C	"
	27	1500	4829	69	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"
	27	1500	4829	70	-	C	"

SEPTEMBER (cont)

MACKEREL TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.1	27	1500	4823	70	-	C	Purse seined
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	71	-	C	"
	27	1500	4823	72	-	C	"
	27	1500	4823	72	-	C	"

SEPTEMBER (cont)

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S. I	27	1500	4829	72	-	C	Purse seined
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	72	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"
	27	1500	4829	73	-	C	"

SEPTEMBER (cont)

MACKEREL TUNA

CRUISE NO.	DATE	TIME	GRID	F.L.P. cms	WT. kgs	AREA	HOW CAUGHT
W.S.1	27	1500	4829	73	-	C	Purse seined
	27	1500	4829	74	-	C	"
	27	1500	4829	74	-	C	"
	27	1500	4829	74	-	C	"
	27	1500	4829	74	-	C	"
	27	1500	4829	74	-	C	"
	27	1500	4829	74	-	C	"
	27	1500	4829	74	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	27	1500	4829	75	-	C	"
	28	0830	4829	72	5.4	C	Trolled

SPANISH MACKEREL

W.S.1	21	1505	5033	112	7.0	C	Trolled
	23	1020	4837	112	9.0	C	"
	23	1150	4736	112	9.0	C	"
	23	1220	4736	109	9.0	C	"
	26	1300	5123	113	11.0	C	"

OCTOBER

MACKEREL TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.1	10	1100	4735	-	-	C	Trolled
	10	1100	4735	-	-	C	"
	12	1150	3754	-	-	B	"
	12	1150	3754	-	-	B	"
	12	1150	3754	-	-	B	"
	20	0600	4241	-	2.3	B	"
	23	1600	5219	-	4.5	C	"
	23	1600	5219	-	4.5	C	"
	23	1600	5219	-	4.5	C	"
	23	1600	5219	-	4.5	C	"

NORTHERN BLUEFIN TUNA

W.S.1	4	1230	4832	-	2.7	C	Trolled
	19	1830	4340	-	-	B	"
	20	0600	4241	-	1.4	B	"
	20	0600	4241	-	1.4	B	"
	20	1630	4235	-	1.6	C	"
	20	1630	4235	-	1.6	C	"
	20	1630	4235	-	1.6	C	"

STRIPED TUNA

W.S.1	11	1635	4142	-	2.0	B	Trolled
	18	1430	3354	50	1.8	A	"
	19	0630	3448	46	1.6	A	"

SOUTHERN BLUEFIN TUNA

W.S.1	11	1630	4142	-	-	B	Trolled
	11	1630	4142	-	-	B	"

JANUARY 1974

SOUTHERN BLUEFIN TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.3	28	0800	0214	-	4.5	E	Trolled
3	28	0830	0214	-	4.5	E	"

YELLOWFIN TUNA

W.S.3	23	0715	0003	-	-	E	Trolled

FEBRUARY

SOUTHERN BLUEFIN TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.4	7	0850	3016	-	0.9	E	Trolled
	9	0800	3416	-	-	E	"
	9	1000	3316	-	-	E	"
	9	1100	3216	-	-	E	"
	9	1100	3216	-	-	E	"
	9	1300	3116	-	-	E	"
	9	1300	3116	-	-	E	"
	9	1400	3016	-	-	E	"
	11	0830	3017	-	-	E	"
	11	0830	3017	-	-	E	"
	12	1310	2815	-	0.5	E	"
	13	0800	2918	-	2.7	E	"
	13	1000	2916	-	2.7	E	"
	13	1000	2916	-	2.7	E	"
	14	0730	3016	-	-	E	"
	15	0900	2218	-	-	E	"

FEBRUARY (cont)

SKIPJACK TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.4	13	1530	3016	-	2.7	E	Trolled
	15	0900	2218	-	-	E	"
	15	0900	2218	-	-	E	"
	15	0900	2218	-	-	E	"
BONITO							
W.S.4	12	0845	3017	-	-	E	Trolled
	13	0700	2919	-	1.4	E	"
YELLOWFIN TUNA							
W.S.4	13	0600	2820	-	3.6	E	Trolled

MARCH

SOUTHERN BLUEFIN TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.6	13	0630	2917	-	-	E	Trolled
	13	0630	2917	-	-	E	"
	14	0745	2916	-	-	E	"
	14	0800	3016	-	3.6	E	"
	14	0800	3016	-	3.6	E	"
	14	0945	3116	-	0.9	E	"
W.S.7	19	0800	2916	-	0.5	E	"
	19	0810	2916	-	4.1	E	"
	19	0810	2916	-	4.1	E	"
	22	1600	3014	-	0.5	E	"

MARCH (cont)

SOUTHERN BLUEFIN TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.7	22	1830	2917	-	0.5	E	Trolled
	23	0700	3015	-	2.7	E	"
	23	0700	3015	-	2.7	E	"

STRIPED TUNA

W.S.6	13	1510	2813	-	5.4	E	Trolled
	13	1510	2813	-	5.4	E	"
	13	1830	2915	-	4.1	E	"

BONITO

W.S.6	14	1645	3016	-	1.4	E	Trolled

FRIGATE MACKEREL

W.S.6	14	0800	3016	-	-	E	Trolled

APRIL

STRIPED TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.9	17	1035	6010	47	2.3	D	Trolled
	17	1038	6010	48	2.3	D	"
	17	1058	6010	48	2.3	D	"
	20	1115	6010	54	3.4	D	"

APRIL (cont)

STRIPED TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.9	20	1115	6010	55	3.7	D	Trolled
	20	1115	6010	57	4.1	D	"
	20	1140	6010	54	3.4	D	"
	20	1140	6010	56	3.7	D	"
	20	1205	6010	51	2.6	D	"
	20	1245	6010	57	3.7	D	"
	20	1245	6010	63	4.8	D	"
	20	1445	5910	62	5.8	D	"
	20	1620	5910	49	2.7	D	"
	20	1630	5910	42	1.6	D	"
	21	0715	5910	48	2.2	D	"
	22	0650	5910	46	2.1	D	"
	22	0700	5910	48	2.3	D	"
	22	0710	5910	46	2.1	D	"
	22	0905	5910	60	4.7	D	"
	22	1245	5910	62	4.8	D	"
	22	1245	5910	53	3.0	D	"
	22	1305	5910	45	1.8	D	"
	25	0740	5910	61	5.0	D	"
	25	0745	5910	54	3.4	D	"
	25	0755	5910	45	2.0	D	"
	25	0755	5910	43	1.6	D	"
	25	0810	5910	51	2.7	D	"
	25	0810	5910	56	4.1	D	"
	25	1010	6010	44	1.7	D	"
	25	1045	6010	57	3.9	D	"
	25	1110	6010	50	2.7	D	"
	25	1615	6010	54	3.0	D	"
	25	1615	6010	60	4.3	D	"
	25	1640	6010	54	3.0	D	"
	26	0945	6009	78	11.0	D	"
	27	1445	5811	48	2.3	D	"
	27	1445	5811	53	3.0	D	"
	28	0820	5812	62	5.0	D	"
	28	0820	5812	59	4.6	D	"
	28	0820	5812	57	3.9	D	"
	28	0840	5911	54	3.4	D	"
	28	0840	5911	60	4.7	D	"
	28	0840	5911	63	5.5	D	"

APRIL (cont)

STRIPED TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.9	28	0840	5911	57	3.9	D	Trolled
	28	0840	5911	62	5.0	D	"
	29	0750	5812	59	4.3	D	"
	29	0930	5711	67	6.4	D	"
	29	0930	5711	64	5.5	D	"
	29	0930	5711	66	5.9	D	"
	29	0930	5711	64	5.5	D	"
	29	0950	5711	66	6.4	D	"
	29	1215	5813	57	3.7	D	"
	29	1215	5813	58	4.3	D	"
	29	1215	5813	58	4.1	D	"
	29	1215	5813	56	3.9	D	"
	29	1230	5813	58	4.1	D	"
	29	1235	5813	58	4.1	D	"
	29	1245	5813	56	3.7	D	"
	29	1245	5813	55	3.4	D	"
	29	1245	5813	56	3.7	D	"
	29	1245	5813	55	3.7	D	"
	29	1245	5813	54	3.4	D	"
	29	1245	5813	60	4.8	D	"
	29	1245	5813	58	4.3	D	"
	29	1245	5813	60	4.6	D	"
	29	1245	5813	57	3.7	D	"
	29	1245	5813	59	4.6	D	"
	29	1245	5813	60	4.3	D	"
	29	1245	5813	56	3.9	D	"
	29	1330	5813	54	3.4	D	"
	29	1345	5813	58	4.1	D	"
	29	1345	5813	59	4.6	D	"
	29	1345	5813	58	4.3	D	"
	29	1345	5813	59	4.3	D	"
	29	1400	5813	55	3.4	D	"
	29	1410	5813	59	4.6	D	"
	29	1410	5813	61	5.0	D	"
	29	1535	5812	58	4.3	D	"
	29	1535	5812	57	4.3	D	"

APRIL (cont)

YELLOWFIN TUNA

Station No.	Date	Time	Grid	D.C.F. cms	Wt. Kgs	Area	How Caught
W.S.9	21	1220	5807	53	3.0	D	Trolled
	22	1000	5810	54	3.4	D	"
	25	1110	6010	56	3.7	D	"
	27	1330	5910	55	3.3	D	"
	27	1730	5911	85	12.0	D	"
	28	1650	5911	64	5.0	D	"
	29	1530	5812	69	6.8	D	"
	29	1530	5812	69	6.8	D	"

MACKEREL TUNA

W.S.9	17	1630	6012	74	6.8	D	Trolled
	20	1355	6109	52	2.3	D	"
	20	1355	6109	57	3.4	D	"

SOUTHERN BLUEFIN TUNA

W.S.9	22	1240	5910	34	0.9	D	Trolled
	28	0925	5811	26	0.4	D	"

SPANISH MACKEREL

W.S.9	19	1715	5912	95	5.9	D	Trolled
	29	1745	5912	62	2.9	D	"
	20	1110	6010	91	4.3	D	"
	22	1800	6012	115	9.5	D	"

MAY (cont)

STRIPED TUNA

CRUISE NO.	DATE	TIME	GRID	F.C.F. cms	WT. kgs	AREA	NEW CATCH?
W.S.9	2	1545	5713	35	-	D	Purse seined
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	35	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	36	-	D	"
	2	1545	5713	37	-	D	"
	2	1545	5713	37	-	D	"
	2	1545	5713	37	-	D	"
	2	1545	5713	37	-	D	"
	2	1545	5713	37	-	D	"
	2	1545	5713	37	-	D	"
	2	1545	5713	37	-	D	"
	2	1545	5713	38	-	D	"
	2	1545	5713	39	-	D	"
	2	1545	5713	39	-	D	"
	2	1545	5713	39	-	D	"
	2	1545	5713	40	-	D	"
	2	1545	5713	40	-	D	"

CYCLOP NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
M.S.S		1945	5713	32	2.5	D	Purse seined
		1945	5713	38	4.0	D	"
		1945	5713	32	3.6	D	"
		1945	5713	33	3.5	D	"
		1945	5713	31	0.9	D	"
		1945	5713	32	0.9	D	"
		1945	5713	32	0.9	D	"
		1945	5713	40	1.2	D	"
		1945	5713	31	1.1	D	"
		1945	5713	30	0.9	D	"
		1945	5713	33	0.9	D	"
		1945	5713	38	1.1	D	"
		1945	5713	37	1.0	D	"
		1945	5713	30	0.9	D	"
		1945	5713	33	0.7	D	"
		1945	5713	33	0.9	D	"
		1945	5713	35	0.8	D	"
		1945	5713	38	1.0	D	"
		1945	5713	38	1.0	D	"
		1945	5713	35	0.8	D	"
		1945	5713	34	0.8	D	"
		1945	5713	36	1.0	D	"
		1945	5713	35	0.9	D	"
		1945	5713	33	0.8	D	"
		1945	5713	35	0.9	D	"
		1945	5713	38	1.0	D	"
		1945	5713	38	1.1	D	"
		1945	5713	34	0.8	D	"
		1945	5713	35	0.9	D	"
		1945	5713	36	1.0	D	"
		1945	5713	33	-	D	"
		1945	5713	33	-	D	"
		1945	5713	34	-	D	"
		1945	5713	34	-	D	"
		1945	5713	33	-	D	"
		1945	5713	33	-	D	"
		1945	5713	33	-	D	"
		1945	5713	33	-	D	"
		1945	5713	35	-	D	"

MAY (cont)

STRIPED TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.9	2	1545	5713	40		D	Purse seined
	2	0730	5812	51	2.7	D	Trolled
	2	0745	5812	50	2.7	D	"
	2	0855	5713	56	3.4	D	"
	2	0920	5713	56	3.4	D	"
	2	0945	5713	58	4.3	D	"
	2	0945	5713	49	2.3	D	"
	6	0800	5811	47	2.2	D	"
	6	1500	5910	57	4.3	D	"
	6	1505	5910	54	3.5	D	"
	7	0850	5910	51	2.6	D	"
	7	1230	6109	60	5.0	D	"
	7	1230	6109	65	6.0	D	"
	7	1305	6009	63	5.5	D	"
	7	1315	6009	58	4.0	D	"
	7	1315	6009	53	3.5	D	"
	7	1330	6010	55	3.2	D	"
	7	1535	5910	48	2.2	D	"
	7	1545	5910	51	2.5	D	"
	7	1545	5910	48	2.3	D	"
	7	1555	5910	51	2.6	D	"
	7	1610	6010	59	4.6	D	"
	7	1610	6010	63	5.1	D	"
	7	1700	5910	53	2.3	D	"
	7	1720	5910	57	3.5	D	"
	12	0935	6209	64	5.2	D	"
	12	0935	6209	62	5.0	D	"
	12	0935	6209	64	5.5	D	"
	12	1015	6109	66	6.0	D	"
	12	1015	6109	62	4.9	D	"
	13	0820	5910	53	3.0	D	"
	13	0823	5910	56	2.7	D	"
	13	1310	5911	53	2.9	D	"
	13	1323	5911	52	2.5	D	"
	13	1345	5911	51	2.1	D	"
	13	1405	5811	51	2.2	D	"
	13	1410	5811	51	2.4	D	"
	14	0955	5911	51	2.1	D	"
	14	1005	5911	48	2.1	D	"

MAY (cont)

STRIPED TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.9	15	0705	5910	50	2.0	D	Trolled
	15	0720	5910	50	2.1	D	"
	15	0720	5910	59	2.6	D	"
	15	0755	5910	51	2.5	D	"
	15	0755	5910	62	4.5	D	"
	15	0755	5910	49	1.6	D	"
	15	0805	5911	48	2.5	D	"
	15	0805	5911	48	1.8	D	"
	15	0805	5911	50	2.0	D	"
	15	0815	5911	50	2.0	D	"
	15	0830	5811	48	2.3	D	"
	15	0830	5811	48	2.2	D	"
	15	1020	5911	54	2.6	D	"
	15	1040	5910	49	1.7	D	"
	15	1045	5910	52	2.5	D	"
	15	1045	5910	52	3.1	D	"
	15	1100	5910	50	2.7	D	"
	15	1100	5910	46	2.6	D	"
	15	1135	5911	58	3.1	D	"
	15	1430	5910	53	3.6	D	"
	16	0645	5811	56	2.9	D	"
	16	0720	5811	54	2.3	D	"
	16	1350	5613	66	6.0	D	"
	16	1415	5613	62	5.5	D	"
	16	1415	5613	66	6.0	D	"
	16	1430	5613	54	3.3	D	"
	16	1430	5613	52	2.9	D	"
	16	1430	5613	55	3.7	D	"
	16	1800	5513	52	2.8	D	"
	16	1800	5513	58	3.7	D	"
	16	1800	5513	50	2.8	D	"
	16	1800	5513	57	3.7	D	"
	16	1800	5513	53	3.0	D	"
	16	1800	5513	49	2.6	D	"
W.S.10	31	0855	5910	50	2.6	D	"
	31	0855	5910	55	3.5	D	"
	31	0900	5910	49	2.4	D	"
	31	0945	5811	64	6.0	D	"
	31	1330	5913	42	1.6	D	"

MAY (cont)

STRIPED TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.10	31	1410	5913	39	1.3	D	Trolled

YELLOWFIN TUNA

W.S.9	7	1015	6010	58	3.9	D	Trolled
	12	0710	6109	29	0.5	D	"
	12	1015	6109	53	3.3	D	"
	13	0822	5910	58	3.6	D	"
	13	0822	5910	57	3.4	D	"
	14	0945	5911	67	6.0	D	"
	15	0705	5910	59	3.0	D	"
	15	0725	5910	57	3.0	D	"
	16	1415	5613	29	0.6	D	"
	16	1430	5613	51	2.8	D	"
	16	1430	5613	55	3.6	D	"
	16	1430	5613	57	3.7	D	"
	16	1440	5613	57	3.9	D	"
	16	1555	5513	32	0.7	D	"
	16	1555	5513	56	3.2	D	"

MACKEREL TUNA

W.S.9	6	0725	5911	49	1.9	D	Trolled

NORTHERN BLUEFIN TUNA

W.S.9	9	1405	6012	61	3.6	D	Trolled

SPANISH MACKEREL

W.S.9	11	1350	6012	115	11.0	D	Trolled

MAY (cont)

SOUTHERN BLUEFIN TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.9	16	1415	5613	35	0.9	D	Trolled

JUNE

SPANISH MACKEREL

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.10	11	1515	4720	-	-	C	Trolled
	11	1540	4720	-	-	C	"
	11	1540	4720	-	-	C	"
	13	0930	5912	-	-	D	"
W.S.11	15	1735	5912	93	7.0	D	"
	17	0750	6709	86	5.5	D	"
	17	0750	6709	74	3.2	D	"
	17	0800	6709	72	3.6	D	"
	17	0800	6709	103	8.4	D	"
	22	0905	7705	81	4.2	D	"
	22	0940	7705	85	5.8	D	"
	22	0945	7705	74	4.0	D	"
	22	1110	7706	103	8.7	D	"
	22	1340	7905	60	1.8	D	"

MACKEREL TUNA

W.S.10	3	1615	6508	56	3.2	D	Trolled
	3	1615	6508	50	2.6	D	"
	3	1615	6508	50	1.8	D	"
	6	1700	6010	41	1.1	D	"
	10	0740	6009	34	0.8	D	"
W.S.11	22	0855	7705	70	5.7	D	"

JUNE (cont)

MACKEREL TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.11	22	0920	7705	74	6.5	D	Trolled
	22	0920	7705	73	6.2	D	"

YELLOWFIN TUNA

W.S.10	1	1040	5216	29	0.6	D	Trolled
	1	1540	5414	57	3.4	D	"
	1	1540	5414	57	3.4	D	"
	2	0800	5910	67	6.4	D	"
	2	0800	5910	63	5.1	D	"
	2	0800	5910	69	7.0	D	"
	2	1100	6009	59	3.3	D	"
	2	1130	6009	53	3.3	D	"
	3	1635	6508	65	6.0	D	"
	3	1635	6508	68	6.0	D	"
	3	1635	6508	62	4.7	D	"
	3	1635	6508	57	3.6	D	"
	4	0940	6507	57	3.4	D	"
	4	1115	6408	32	0.8	D	"
	6	1330	6309	58	3.8	D	"
	6	1330	6309	59	4.0	D	"
	6	1700	6010	59	3.5	D	"
	6	1700	6010	61	4.3	D	"
	12	0830	5812	70	5.5	D	"
	12	0830	5812	68	6.0	D	"
	12	0920	5912	79	7.0	D	"
W.S.11	16	0730	5911	71	7.0	D	"
	17	0900	6708	77	8.8	D	"
	17	1030	6707	53	3.1	D	"
	22	0905	7705	67	5.9	D	"
	26	1230	6204	55	3.2	D	"
	26	1230	6204	55	3.3	D	"
	27	1300	6106	60	4.2	D	"

JUNE [illegible]

STRIPED BASS

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.10	1	1150	5215	32	0.7	D	Trolled
	2	0805	5910	45	2.0	D	"
	2	0805	5910	31	0.8	D	"
	2	0805	5910	29	0.5	D	"
	2	0810	5910	54	3.5	D	"
	2	0815	5910	49	2.3	D	"
	2	0817	5910	50	2.6	D	"
	2	0820	5910	51	2.7	D	"
	2	1305	6109	49	2.4	D	"
	2	1530	6009	51	2.6	D	"
	2	1530	6009	56	3.6	D	"
	2	1615	6010	41	1.2	D	"
	3	0915	5909	46	1.9	D	"
	3	1020	6009	39	1.1	D	"
	3	1130	6109	49	2.5	D	"
	3	1500	6308	52	3.1	D	"
	3	1500	6308	59	4.6	D	"
	3	1500	6308	56	3.4	D	"
	3	1510	6408	53	2.9	D	"
	3	1510	6408	47	2.3	D	"
	3	1510	6408	53	3.0	D	"
	3	1510	6408	41	1.4	D	"
	3	1510	6408	51	2.7	D	"
	3	1645	6508	52	3.0	D	"
	3	1655	6508	65	6.0	D	"
	3	1655	6508	68	6.0	D	"
	3	1700	6508	56	2.3	D	"
	4	0700	6608	53	2.8	D	"
	4	0700	6608	50	2.1	D	"
	4	0700	6608	50	2.5	D	"
	4	0700	6608	51	2.9	D	"
	4	0700	6608	54	3.1	D	"
	6	1115	6408	60	4.5	D	"
	6	1610	6009	62	4.8	D	"
	6	1610	6009	52	2.9	D	"
	6	1700	6010	47	1.9	D	"
	6	1730	6010	60	4.5	D	"
	8	0700	6507	58	4.0	D	"
	8	1405	6707	54	2.1	D	"

JUNE (cont)

STRIPED TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
M.S.10	8	1630	5607	50	2.5	D	Trolled
	8	1630	5607	58	4.3	D	"
	10	0810	5016	48	2.3	D	"
	10	0815	5016	49	2.4	D	"
	11	0700	5017	48	2.3	C	"
	11	0740	4918	48	2.2	C	"
	11	0740	4918	48	2.3	C	"
	11	0750	4918	45	1.9	C	"
	11	0800	4918	47	2.0	C	"
	11	0800	4918	48	2.0	C	"
	11	0800	4918	37	1.1	C	"
	11	1115	4718	43	1.6	C	"
	11	1340	4720	49	2.4	C	"
	11	1340	4720	53	3.2	C	"
	11	1340	4720	41	1.4	C	"
	12	1230	4718	47	2.2	B	"
	12	1525	5017	47	2.1	C	"
	12	1535	5017	48	2.2	C	"
	12	1620	5117	49	2.3	C	"
	12	1620	5117	47	2.1	C	"
	12	1800	5218	53	4.0	B	"
M.S.11	16	1710	5608	52	2.3	B	"
	17	1030	5707	66	6.1	B	"
	17	1055	5707	61	4.8	B	"
	17	1620	5709	51	2.7	B	"
	23	0830	5203	57	3.8	A	"
	23	0850	5203	38	1.0	A	"
	23	0910	5202	51	2.6	A	"
	23	0910	5202	53	3.1	A	"
	26	1200	5204	75	9.2	B	"
	26	1805	5105	72	9.1	B	"
	27	1245	5106	56	4.1	B	"
	31	0745	5910	52	3.2	B	"
	31	1400	5905	50	2.8	B	"

JULY

SPANISH MACKEREL

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.12	30	0715	3651	100	7.5	B	Trolled
	30	0815	3651	106	8.0	B	"

STRIPED TUNA

W.S.12	26	0830	3942	52	2.9	B	Trolled
	29	0740	3352	55	3.6	A	"
	29	1515	3052	51	2.8	A	"
	29	1525	3052	48	2.5	A	"

YELLOWFIN TUNA

W.S.12	22	0900	4436	55	2.5	C	Trolled
	22	0945	4436	54	2.5	C	"
	22	1530	4636	57	3.0	C	"
	25	1630	4140	50	2.2	B	"
	26	0730	3942	54	2.6	B	"
	26	0845	3843	50	2.2	B	"
	26	0855	3843	50	2.3	B	"
	26	0855	3843	51	2.3	B	"
	26	0855	3843	48	2.0	B	"
	26	0900	3843	48	2.0	B	"
	26	0900	3843	51	2.3	B	"
	26	0930	3843	51	2.3	B	"
	26	0940	3843	53	2.5	B	"
	26	1100	3844	50	2.2	B	"
	26	1100	3844	51	2.3	B	"
	26	1100	3844	49	2.0	B	"
	26	1115	3844	50	2.0	B	"
	26	1200	3745	50	2.1	B	"
	26	1300	3745	50	2.1	B	"
	26	1430	3746	52	2.5	B	"
	27	0700	3646	52	2.3	B	"
	27	0725	3646	51	2.3	B	"
	27	0730	3646	53	2.4	B	"
	27	0730	3646	51	2.3	B	"

JULY (cont)

YELLOWFIN TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.12	27	1110	3650	51	2.4	B	Trolled
	27	1115	3650	53	2.5	B	"
	27	1115	3650	50	2.2	B	"
	27	1135	3650	56	3.1	B	"
	28	0815	3254	54	2.4	A	"
	28	0815	3254	53	2.5	A	"
	28	0815	3254	55	2.6	A	"
	28	0815	3254	53	2.5	A	"
	28	1115	3255	55	2.6	A	"
	28	1200	3355	56	2.7	A	"
	28	1200	3355	55	2.8	A	"
	28	1200	3355	52	2.6	A	"
	28	1200	3355	54	2.6	A	"
	28	1220	3355	54	2.7	A	"
	28	1230	3355	55	2.7	A	"
	28	1230	3355	53	2.6	A	"
	28	1230	3355	56	3.0	A	"
	28	1245	3354	54	2.6	A	"
	28	1245	3354	55	2.6	A	"
	28	1400	3452	56	2.9	A	"
	28	1435	3452	53	2.8	A	"
	28	1435	3452	60	3.7	A	"
	29	0630	3452	55	2.7	A	"
	29	0630	3452	55	2.7	A	"
	29	0630	3452	55	2.7	A	"
	29	0630	3452	55	2.7	A	"
	29	0710	3352	52	2.5	A	"
	29	0715	3352	54	2.5	A	"
	29	0715	3352	55	2.7	A	"
	29	0720	3352	53	2.7	A	"
	29	0720	3352	54	2.6	A	"
	29	0725	3352	55	2.7	A	"
	29	0730	3352	55	2.7	A	"
	29	0730	3352	54	2.6	A	"
	29	0755	3352	52	2.5	A	"
	29	0755	3352	55	2.8	A	"
	29	0830	3251	54	2.7	A	"

JULY (cont)

ALBACORE TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
K.S.12	22	0900	4436	63	4.0	C	Trolled
	22	0910	4436	65	4.5	C	"
	22	0920	4436	65	4.3	C	"
	22	0930	4436	63	4.3	C	"
	22	0940	4436	65	4.5	C	"
	22	0945	4436	62	3.5	C	"
	22	1600	4636	61	3.5	C	"
	22	1610	4636	61	3.5	C	"
	22	1620	4636	57	3.2	C	"
	22	1630	4636	50	2.3	C	"
	22	1640	4636	50	2.5	C	"
	22	1650	4636	60	3.4	C	"
	22	1700	4636	62	3.8	C	"
	22	1710	4636	57	3.4	C	"
	22	1720	4636	54	2.7	C	"
	22	1730	4636	61	3.4	C	"
	25	0830	4738	60	3.3	C	"
	25	0830	4738	62	3.6	C	"
	25	0830	4738	66	4.3	C	"
	25	1030	4438	54	2.7	C	"
	25	1240	4338	51	2.2	C	"
	25	1255	4338	50	2.2	C	"
	25	1255	4338	49	2.1	C	"
	25	1255	4338	49	2.1	C	"
	25	1255	4338	51	2.2	C	"
	25	1315	4238	50	2.2	C	"
	25	1600	4140	48	2.0	B	"
	25	1630	4140	49	2.1	B	"
	27	1230	3550	65	4.3	A	"
	28	0815	3254	52	2.2	A	"
	28	0815	3254	53	2.3	A	"
	28	0945	3253	36	0.7	A	"
	28	0945	3253	36	0.8	A	"
	29	1515	3052	50	2.2	A	"
	29	1525	3052	36	0.9	A	"
	29	1730	3153	50	2.2	A	"
	29	1730	3153	49	2.1	A	"

AUGUST

MACKEREL TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
W.S.12	1	1700	3658	64	4.5	B	Trolled
	1	1700	3658	74	5.6	B	"
	1	1700	3658	71	5.6	B	"
	2	1100	3452	48	1.9	A	"
	3	0745	3747	50	2.0	B	"
	3	0745	3747	51	2.1	B	"
	6	1750	4435	49	2.0	C	"
	8	1050	4936	74	5.5	C	"
	8	1050	4936	75	6.2	C	"
	8	1730	4731	67	4.5	C	"
	8	1730	4731	65	4.5	C	"
	8	1735	4731	72	5.7	C	"
	8	1740	4731	71	5.1	C	"
	8	1750	4731	69	5.4	C	"
	8	1755	4731	71	5.1	C	"
	9	0700	4627	53	2.4	C	"
	9	0700	4627	51	2.0	C	"
	10	0915	4622	48	1.7	C	"
	11	1245	5812	39	1.1	D	"
	11	1245	5812	47	1.7	D	"
	17	0900	4438	65	4.7	C	"
	17	1100	4340	60	3.5	B	"
	17	1110	4340	61	3.6	B	"
	17	1110	4340	62	4.0	B	"
	17	1120	4340	60	3.5	B	"
	17	1120	4340	61	3.5	B	"
	17	1645	4535	66	4.6	C	"
	17	1645	4535	61	3.7	C	"
	17	1740	4535	71	5.6	C	"
	17	1740	4535	75	6.5	C	"
	17	1800	4535	64	4.1	C	"
	17	1800	4535	63	5.9	C	"
	17	1800	4535	60	3.5	C	"
	18	0815	5024	69	5.3	C	"

AUGUST (cont)

YELLOWFIN TUNA

CRUISE NO.	DATE	TIME	GRID	L.C.F. cms	WT. kgs	AREA	HOW CAUGHT
M.S.22	1	1630	3658	81	7.7	B	Trolled
	3	0645	3748	51	2.4	B	"
	3	0850	3747	50	2.2	B	"
	11	1220	5812	65	5.5	D	"
	18	0815	5024	68	5.9	C	"

STRIPED TUNA

M.S.22	2	1230	3351	51	2.5	A	Trolled
	2	1230	3351	51	2.5	A	"
	3	1330	3443	50	2.6	B	"
	3	1330	3443	49	2.3	B	"
	6	1650	4335	51	2.7	C	"
	6	1650	4335	50	2.5	C	"
	10	1630	4818	53	3.1	C	"
	10	1725	4818	51	3.0	C	"
	10	1725	4818	49	2.5	C	"
	10	1725	4818	51	2.7	C	"

SPANISH MACKEREL

M.S.22	8	1015	4936	56	1.7	C	Trolled
	8	1015	4936	113	10+	C	"
	8	1015	4936	123	10+	C	"
	9	0730	4627	Total of 127		C	"
		to		Av. wt 11.7			
		1130		Wt range 7-18			
	11	1245	5812	80	4.1	D	"
	25	1030	5717	57	1.7	C	"

4. TUNA PURSE SEINE SETS

AUGUST 1973 - AUGUST 1974

SET NO.	CRUISE NO.	DATE	TIME	GRID	AREA	DEPTH	CATCH	REMARKS
1	W.S. 1	4. 9.73	1650	5910	D	120	-	Trial set
2	W.S. 1	27. 9.73	1500	4829	C		3/4 ton M.T.	All fish meshed (146 fish)(tail & operculum)
3	W.S. 1	3.10.73	1630	-		23	Quantity of bottom fish coral & sponges	Fish escaped under tow-line. Net rolled up.
4	W.S. 1	5.10.73	0800	5028	C	22	Nil	Net badly rolled up. Net hooked up.
5	W.S. 1	5.10.73	1130	4928	C	27	Few fish B.W. shark sailfish	Purse line snagged. Net rolled up
6	W.S. 5	25. 2.74	1230	2118	E	-	Nil	Towline fouled. Damage to bulwarks. Fish encircled (Est. 30 tons)
7	W.S. 9	25. 4.74	1148-1500	6010	D	60	Nil	Net twisted on purse line.
8	W.S. 9	26. 4.74	1451-1608	5908	D	320	Nil	Trial set
9	W.S. 9	2. 5.74	1545-1730	5713	D	80	79 S.T.	All fish tail meshed
10	W.S. 9	6. 5.74	1525-1650	5910	D	80	Nil	Snapped purse cable. Fish encircled (Est. 50 tons)
11	W.S.12	26. 7.74	1430	3746	B	72	Nil	Net tangled. Fish escaped.
12	W.S.12	27. 7.74	0800	3648	B	80	Nil	Fish escaped before pursing.

5. SURFACE SALINITIES AND TEMPERATURES

JANUARY 1974

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP.°C	SURFACE SALINITY (‰)	AREA
W.S.2	4	1145	2218	20.50	35.60	E
	5	0800	2018	20.20	35.70	E
	5	1240	1717	21.00	35.60	E
	5	1300	1718	20.70	35.80	E
	6	0845	1617	21.30	35.60	E
	6	0945	1315	21.50	35.60	E
	7	0600	1416	20.90	35.80	E
	7	0810	1414	21.50	35.50	E
	7	0915	1415	21.50	35.50	E
	7	1040	1214	22.10	35.60	E
	7	1300	1115	Salinometer U.S.		E
W.S.3	22	1400	0107	23.70	35.40	E

FEBRUARY

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP.°C	SURFACE SALINITY (‰)	AREA
W.S.4	7	1130	2914	21.00	35.80	E
	7	1230	2913	22.00	35.90	E
	7	1430	2914	21.30	35.90	E
	12	1000	2914	22.00	36.10	E
	14	0900	3114	20.20	35.90	E
	14	0930	3114	21.50	36.40	E
	14	1300	3314	21.50	36.00	E
	14	1600	3415	20.90	35.60	E
W.S.5	23	0530	2115	21.50	35.50	E
	23	0700	2114	22.00	35.60	E
	23	0815	2113	22.10	35.60	E
	23	0930	2112	21.90	35.60	E

FEBRUARY (cont)

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP. °C	SURFACE SALINITY (‰)	AREA
W.S.5	23	1100	2112	21.50	35.60	E
	23	1215	2212	21.20	35.70	E
	23	1400	2213	22.00	35.60	E
	23	1530	2215	22.20	Salino-meter U.S.	E

MARCH

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP. °C	SURFACE SALINITY (‰)	AREA
W.S.6	12	1830	2020	22.00	36.17	E
	12	1930	2219	21.75	35.73	E
	12	2030	2319	21.50	35.91	E
	12	2130	2319	21.50	36.18	E
	12	2230	2419	21.50	36.08	E
	12	2330	2519	21.50	36.20	E
	13	0030	2619	21.20	36.17	E
	13	0130	2720	21.00	36.13	E
	13	0230	2720	21.00	36.11	E
	13	0330	2820	20.80	36.08	E
	13	0430	2919	20.50	35.86	E
	13	0530	2918	20.50	35.86	E
	13	0630	2917	20.20	35.84	E
	13	0730	2916	20.00	35.71	E
	13	0830	2915	21.00	35.62	E
	13	0930	2914	21.80	35.62	E
	13	1030	2814	21.50	35.46	E
	13	1130	2813	21.00	35.70	E
	13	1230	2714	21.50	35.64	E
	13	1330	2713	21.80	35.68	E
	13	1830	2815	20.80	35.75	E
	15	0830	2714	21.50	35.88	E

MARCH (cont)

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP. °C	SURFACE SALINITY (‰)	AREA
W.S.6	15	0930	2713	21.80	35.66	E
	15	1100	2613	21.80	35.62	E
	15	1230	2515	22.00	35.68	E
	15	1330	2416	22.20	35.77	E
	15	1430	2317	22.20	35.77	E
	15	1530	2317	22.20	35.71	E
	15	1600	2316	22.50	35.57	E
	15	1730	2317	22.50	35.57	E
	15	1930	2318	22.00	35.66	E
	15	2045	2219	21.50	35.79	E
W.S.7	21	1100	2813	22.50	-	E
	22	0730	3413	21.00	-	E
	23	1045	2913	23.00	-	E
	23	1200	2813	23.00	-	E
	23	1300	2713	23.00	-	E
W.S.8	26	0830	2118	22.90	35.70	E
	26	1030	2116	23.00	35.70	E
	26	1230	2114	23.20	35.60	E
	26	1430	2113	23.40	35.00	E
	26	1600	2111	23.30	35.60	E
	26	1815	1911	23.60	35.70	E
	26	2000	1711	23.50	35.70	E
	26	2200	1611	22.70	35.70	E
	27	2400	1613	22.50	35.70	E
	27	0200	1615	23.00	35.70	E
	27	0500	1617	22.60	35.70	E

APRIL

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP. °C	SURFACE SALINITY (‰)	AREA
W.S.9	6	0830	1817	22.00	35.60	E
	7	0845	1315	22.60	35.60	E
	7	0830	1114	22.80	35.60	E
	7	1100	1013	22.50	35.60	E
	7	1150	0913	23.80	35.60	E
	7	1415	0712	23.90	35.50	E
	7	1600	0611	24.30	35.60	E
	9	1145	0208	23.60	35.50	E
	10	1100	9806	23.70	35.60	E
	10	1320	9706	24.50	35.60	E
	10	1400	9606	25.00	35.60	E
	10	1630	9505	25.50	35.00	E
	11	0900	8100	25.30	35.00	D
	11	1115	7900	25.30	35.60	D
	11	1400	7700	25.80	35.70	D
	11	1630	7501	26.40	35.40	D
	12	0830	6806	27.00	35.50	D
	12	1335	6507	28.10	35.60	D
	12	1630	6308	28.10	35.50	D
	15	0930	5912	28.00	35.60	D
	15	1200	5710	28.30	35.50	D
	15	1410	5709	28.30	35.40	D
	17	0900	5910	27.50	35.58	D
	17	1745	6013	26.70	36.82	D
	20	0650	5911	27.30	35.01	D
	20	1000	5910	27.80	34.88	D
	21	0900	5910	27.52	34.90	D
	21	1000	5809	27.40	34.88	D
	21	1130	5807	27.80	34.63	D
	21	1230	5807	28.60	34.87	D
	21	1430	5805	28.40	34.85	D
	25	0840	5909	27.50	34.96	D
	25	1010	6010	28.70	34.94	D
	25	1730	5910	27.50	34.92	D
	26	0900	6009	27.60	34.88	D
	26	0955	6009	26.60	34.97	D
	26	1120	5907	27.50	35.01	D
	26	1915	6006	27.50	34.87	D
	26	2035	6005	27.20	34.97	D
	26	2150	6004	27.00	34.96	D

APRIL (cont)

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP. °C	SURFACE SALINITY (‰)	AREA
W.S.9	26	2330	6104	27.00	34.99	D
	27	0300	6304	26.50	34.94	D
	27	0710	6205	27.30	34.87	D
	27	1215	6010	27.60	34.96	D
	27	1500	5811	28.00	34.88	D
	27	1800	5911	27.20	34.99	D
	28	1000	5811	27.00	34.88	D
	28	1145	5711	27.80	-	D
	29	0920	5711	27.40	35.01	D

MAY

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP. °C	SURFACE SALINITY (‰)	AREA
W.S.9	2	1145	5614	27.80	34.88	D
	6	0930	5911	28.94	34.12	D
	6	1200	6009	27.60	34.88	D
	7	1145	6010	27.70	34.87	D
	13	0910	5909	27.30	34.92	D
	13	1100	5908	27.40	34.88	D
	14	1445	6209	27.20	34.85	D
	16	0825	5712	26.80	34.96	D
	16	0945	5611	27.30	34.94	D
W.S.10	31	1100	5811	26.80	34.96	D
	31	1445	5513	26.50	34.90	D

JUNE

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP. °C	SURFACE SALINITY (‰)	AREA
W.S.10	1	0850	5413	26.90	34.79	D
	1	1220	5215	26.90	34.74	D
	2	1100	6009	26.50	-	D
	3	0840	5909	26.70	34.83	D
	4	1045	6408	26.50	34.85	D
	6	1240	6408	25.80	34.90	D
	6	1330	6309	25.80	34.99	D
	6	1430	6209	25.90	34.94	D
	6	1530	6109	25.90	34.94	D
	6	1630	6009	26.00	34.96	D
	6	1730	6010	26.10	34.96	D
	8	0830	6507	25.40	34.97	D
	8	0920	6506	24.80	34.97	D
	9	1050	6706	24.90	34.96	D
	9	1545	6906	25.00	34.96	D
	10	1145	6007	26.00	34.92	D
	10	1545	5811	26.00	34.87	D
	10	1800	5711	26.00	34.81	D
	10	1900	5611	25.75	34.79	D
	10	2000	5512	26.20	34.81	D
	10	2100	5513	26.00	34.81	D
	10	2300	5413	26.00	34.85	D
	10	2400	5414	26.00	34.84	D
	11	0100	5314	26.00	34.83	D
	11	0200	5315	26.00	34.97	D
	11	0300	5215	26.00	34.81	D
	11	0400	5115	26.00	34.87	D
	11	0500	5116	26.00	34.79	D
	11	0600	5017	26.00	34.83	C
	11	0700	5017	25.70	34.80	C
	11	0800	4918	26.00	34.79	C
	11	1030	4818	25.08	34.81	C
	11	1130	4718	25.09	34.78	C
	11	1200	4719	26.20	34.72	C
	11	1440	4720	26.20	34.69	C
	12	0930	4718	26.00	34.79	C
	13	0830	5912	25.50	34.85	D
W.S.11	16	1200	6308	25.00	34.96	D
	16	1400	6308	24.80	34.97	D
	17	1145	6806	23.80	34.99	D

JUNE (cont)

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP.°C	SURFACE SALINITY (‰)	AREA
W.S.11	23	0830	8203	24.00	35.02	E
	23	1100	8201	23.80	35.03	E
	23	1210	8200	23.50	34.99	E
	23	1345	8299	23.00	35.05	E
	23	1600	8298	22.50	35.14	E
	23	1800	8198	22.50	35.07	D
	24	1130	7797	22.80	34.96	D
	24	1230	7797	23.00	35.03	D
	24	1330	7697	23.00	35.03	D
	24	1430	7597	22.50	34.99	D
	24	1515	7597	23.00	34.97	D
	25	0730	7000	23.40	34.85	D
	25	0900	7000	24.00	34.83	D
	25	0945	6900	24.00	34.85	D
	25	1600	6801	24.60	34.85	D
	26	1145	6304	24.50	34.88	D
	26	1340	6204	24.50	34.85	D
	26	1530	6204	24.50	34.88	D
	27	1000	6107	24.50	34.94	D
	30	1420	5905	24.30	34.92	D

JULY

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP.°C	SURFACE SALINITY (‰)	AREA
W.S.12	25	1200	4338	24.20	34.78	C
	25	1345	4238	25.00	34.65	C
	26	0800	3942	25.20	34.45	B
	26	0930	3843	25.10	34.58	B
	27	0920	3648	25.20	34.61	B
	29	0930	3151	25.80	34.47	A
	29	1200	3151	26.20	34.49	A

AUGUST

CRUISE NO.	DATE	TIME	GRID	SURFACE TEMP. °C	SURFACE SALINITY (‰)	AREA
W.S.12	2	0630	3555	25.20	34.54	A
	3	0745	3747	25.10	34.61	B
	3	1330	3443	26.00	34.47	B
	5	0945	3144	25.70	34.52	A
	5	1510	3242	26.20	34.52	B
	6	0620	3738	25.20	34.61	C
	8	1400	4832	24.50	34.79	C
	9	1530	4427	26.30	34.70	C
	10	0800	4622	24.40	34.79	C
	11	1245	5812	23.50	34.92	D
	17	0830	4538	24.50	34.70	C
	17	1200	4440	24.00	34.83	B

6(a) BATHYTHERMOGRAPH CASTS

AUGUST 1973

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
1/1	30	1415	4628	66	Nil	25.6	C

SEPTEMBER

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
1/2	2	1600	5319	46	Nil	23.5	D
1/3	3	1330	5615	110	Nil	25.0	D
1/4	3	1500	5714	146	Nil	24.5	D
1/5	3	1800	5812	165	Nil	24.5	D
1/7	21	1400	5031	46	Nil	24.5	D
1/8	24	1200	4822	73	Nil	24.5	C
1/10	27	1400	4825	46	Nil	24.0	C

OCTOBER

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
1/11	4	1300	4832	49	Nil	25.8	C
1/12	12	0935	3653	73	Nil	26.5	B
1/13	18	0800	3448	273	Nil	27.0	A
1/14	19	1400	3643	183	30 - 37	27.3	B

OCTOBER (cont)

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
1/15	20	0900	4238	128	30 - 49	26.5	B
1/16	20	1200	4035	141	Nil	27.0	C
1/17	23	1030	4918	73	15 - 30	25.5	C
1/18	24	1400	5215	110	Nil	24.3	D
1/19	26	0930	5215	146	Nil	25.3	D
1/20	26	1215	5114	732	Nil	25.0	D

JANUARY 1974

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
2/2	4	1415	2117	293	Nil	21.0	E
2/3	5	1240	1717	137	Nil	21.0	E
2/4	5	1300	1716	165	18 - 24	21.8	E
2/5	6	0845	1617	135	52 - 57	21.3	E
2/6	6	0945	1516	128	37 - 46	21.5	E
2/7	6	1030	1416	202	52 - 61	21.5	E
2/8	7	0710	1415	586+	21 - 27	21.5	E
2/9	7	0935	1315	567	Nil	21.5	E
2/10	7	1100	1214	311	Nil	21.5	E
2/11	7	1210	1215	91	3 - 6 & 18 - 27	21.8	E
2/12	7	1300	1115	155	Nil	22.0	E
2/13	7	1420	1115	172	21 - 33	22.8	E
3/1	17	1430	0209	124	0 - 6	23.0	E
3/2	22	1400	0107	600+	0 - 6	24.0	E

FEBRUARY

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
4/3	7	1130	2914	256	52 - 60	21.0	E
4/4	7	1200	2913	600+	21 - 27 & 64 - 73	22.0	E
4/5	7	1430	2914	146	Nil	21.3	E
4/6	7	1015	2914	137	70 - 79	22.0	E
4/7	14	0900	3114	137	Nil	20.2	E
4/8	14	0930	3114	146	6 - 24	21.5	E
4/9	14	1300	3314	143	6 - 9	21.5	E
4/10	14	1600	3415	73	3 - 12	20.9	E
5/1	23	0530	2115	-	61 - 76	21.6	E
5/2	23	0700	2114	-	Nil	21.7	E
5/3	23	0815	2113	-	37 - 46 & 75 - 85	21.7	E
5/4	23	0930	2112	-	43 - 82	21.5	E
5/5	23	1100	2112	-	46 - 58	21.4	E
5/6	23	1215	2212	-	24 - 30 & 52 - 58	21.0	E
5/7	23	1400	2213	-	49 - 58	21.6	E
5/8	23	1530	2215	-	49 - 55	21.9	E
5/9	23	1730	2217	-	Nil	22.0	E
5/10	23	1830	2218	-	Nil	21.4	E

MARCH

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
6/1	13	1000	2914.1	183	Nil	21.5	E
6/2	13	1330	2814.3	183	Nil	21.0	E
6/3	13	-	2713	747	52 - 58	21.5	E
6/4	15	1130	2713	747	Nil	21.5	E
7/5	21	1100	2813	549	30 - 37	22.5	E
7/6	22	-	3213	732	Nil	21.8	E

MARCH (cont)

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
7/7	23	-	2813	732	43 - 71	23.0	E
7/8	26	1230	2114.2	732	Nil	23.0	E
7/9	26	1600	2111	1097	Nil	23.0	E
7/10	26	1815	1911	3658	37 - 43 & 61 - 67 & 76 - 80	23.6	E

APRIL

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
9/1	7	1145	0913	549	40 - 46	23.8	E
9/2	10	1400	9606	366	46 - 64	25.1	E
9/3	17	0900	5910	600+	Nil	27.5	D
9/6	20	1000	5910	600+	Nil	27.7	D
9/7	21	0900	5910	43	Nil	27.5	D
9/8	21	1000	5809.3	600+	70 - 82	27.4	D
9/9	21	1130	5807.2	600+	Nil	27.8	D
9/10	21	1230	5807	600+	61 - 88	28.6	D
9/11	21	1430	5505	600+	71 -240	28.4	D
9/12	25	0845	5801.3	549	76 - 85	27.5	D
9/13	25	1015	6010	220	71 - 84	27.1	D
9/15	25	1745	5910.4	144	73 - 88	27.5	D
9/16	26	0900	6001.1	600+	79 - 85	27.6	D
9/17	26	1000	6009	600+	79 - 85	26.6	D
9/18	26	1115	5901	600+	61 - 85	27.5	D
9/20	26	1915	6006	600+	58 - 89	27.5	D
9/21	26	2035	6015	600+	12 - ? & 55 - 91	27.2	D
9/22	26	2150	6004	600+	61 - 97	27.0	D
9/23	26	2330	6104	600+	52 - 85	27.0	D
9/24	27	0300	6304	600+	61 - 92	26.5	D
9/25	27	0710	6205	600+	58 - 86	27.3	D

APRIL (cont)

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP. °C	AREA
9/27	27	1500	5511	165	64 - 67	28.0	D
9/29	28	1000	5811.2	183	76 - 86	27.0	D
9/30	28	1145	5711	476	49 - 86	27.8	D
9/31	29	0920	5712	165	86 - ?	27.4	D

MAY

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP. °C	AREA
9/32	2	1145	5614.1	165	64 - 76	27.8	D
9/35	6	1700	6009	549+	130 - 160 & 160 - 195	27.6	D
9/37	7	1145	6010.1	128	100 - 180	27.7	D
9/38	13	0915	5904.4	600+	100 - 195	27.3	D
9/39	13	1100	5908	600+	85 - 105 & 120 - 195	27.4	D
9/40	14	1500	6209.3	220	105 - 200	27.2	D
9/41	16	0830	5712	238	80 - 120 & 140 - 200	26.8	D
9/42	16	0945	5611.4	403	100 - 200	27.3	D
10/1	31	1100	5811	183	37 - 62	26.8	D
10/2	31	1445	5513.3	293	100 - 195	26.5	D

JUNE

CRUISE/ STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP.°C	AREA
10/3	1	0845	5415.1	366	100 - 200	26.9	D
10/4	1	1220	5215.1	600+	80 - 190	26.9	D
10/5	2	1100	6009.2	421	120 - 200	26.5	D
10/6	3	0840	5909.3	600+	120 - 200	26.7	D
10/7	4	1100	6408.3	220	70 - 200	26.5	D
10/14	8	0730	6507	256	110 - 180	25.4	D
10/15	8	0915	6506	600+	100 - 180	24.8	D
10/16	9	1050	6706	284	110 - 180	25.0	D
10/17	10	1145	6007.2	600+	110 - 190	26.0	D
10/36	11	1700	4719	329	120 - 180	26.2	C
10/38	12	0930	4718	348	123 - 180	26.0	C
11/1	16	1200	6308	600+	140 - 180	25.0	D
11/2	16	1400	6308.3	600+	165 - 190	24.8	D
11/3	17	1145	6806	128	120 - 150	23.8	D
11/6	23	1210	8200.1	183	0 - 20 & 80 - 150	23.5	D
11/7	23	1345	8299	514	90 - 190	23.0	D
11/8	23	1600	8298.3	600+	55 - 200	22.5	D
11/9	23	1800	8198.1	600+	40 - 200	22.5	D
11/14	24	1515	7597	600+	0 - 10 & 80 - 180	23.0	D
11/15	25	0730	7000	600+	60 - 180	23.4	D
11/16	25	0945	6900	600+	30 - 190	24.5	D
11/21	26	1530	6204	600+	60 - 180	24.5	D
11/23	30	1420	5905	600+	120 - 190	24.3	D

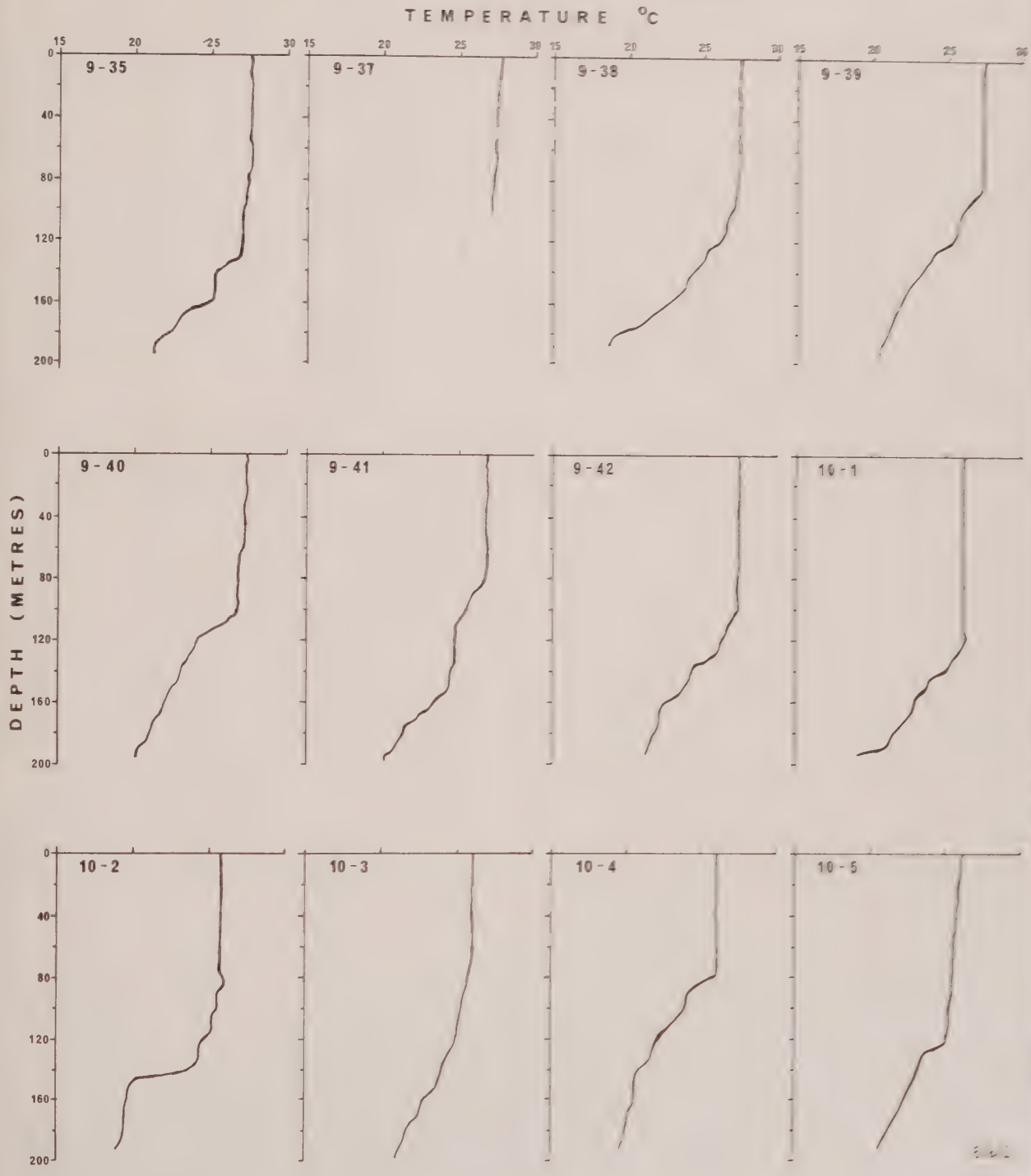
JULY

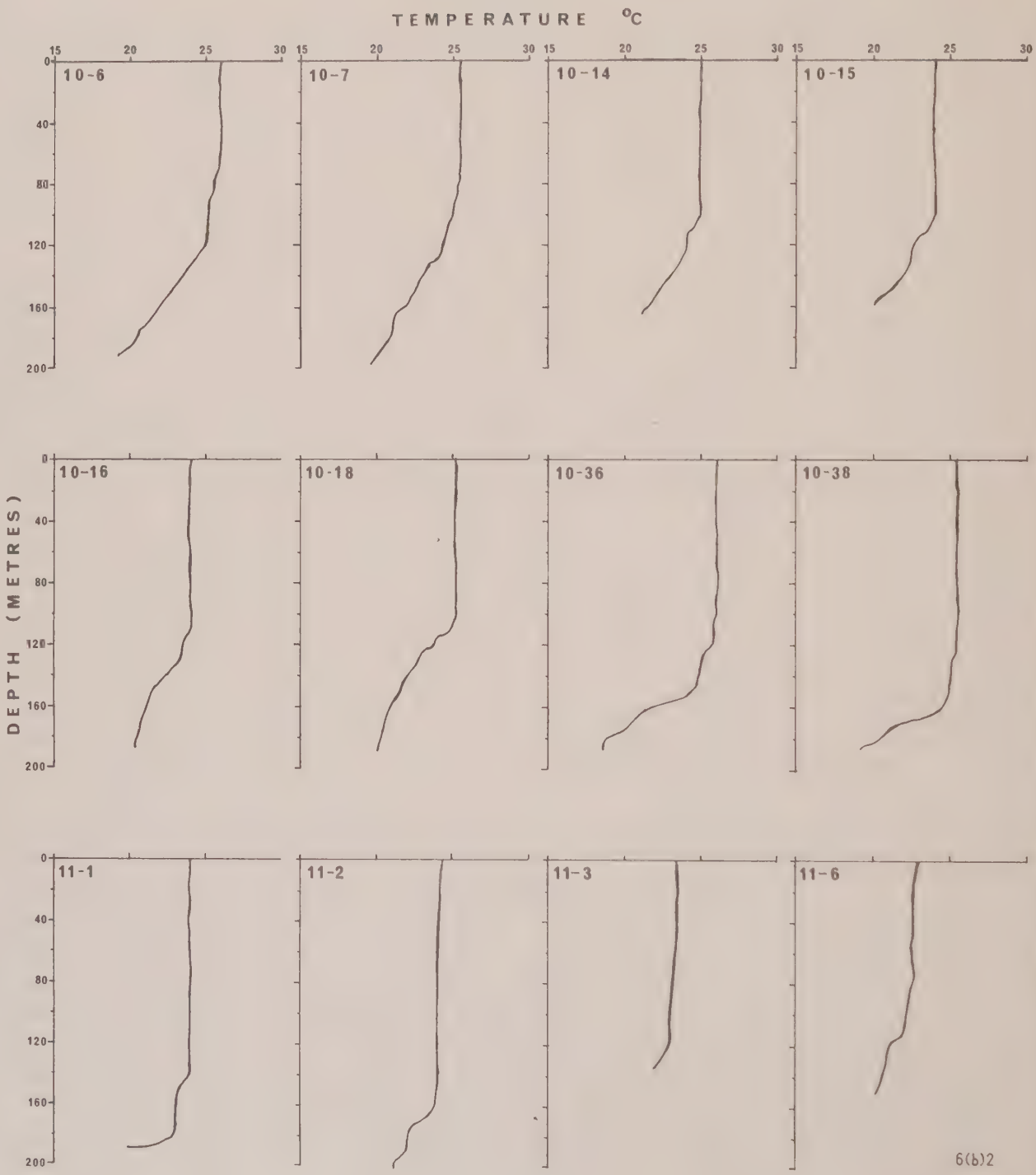
CRUISE STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP. °C	AREA
12/4	26	0930	3843	137	-	25.1	B
12/8	29	1200	3151	348	60 - 90 & 100 - 190	26.2	A

AUGUST

CRUISE STN NO.	DATE	TIME	GRID	SOUNDED DEPTH (metres)	THERMOCLINE RANGE (metres)	SURFACE TEMP. °C	AREA
12/19	17	0830	4538	55	Nil	24.5	C
12/20	17	1200	4440	59	40 - 60	24.0	B

Tuna Survey – Western Australia 1973 – 74
Bathythermograph Casts

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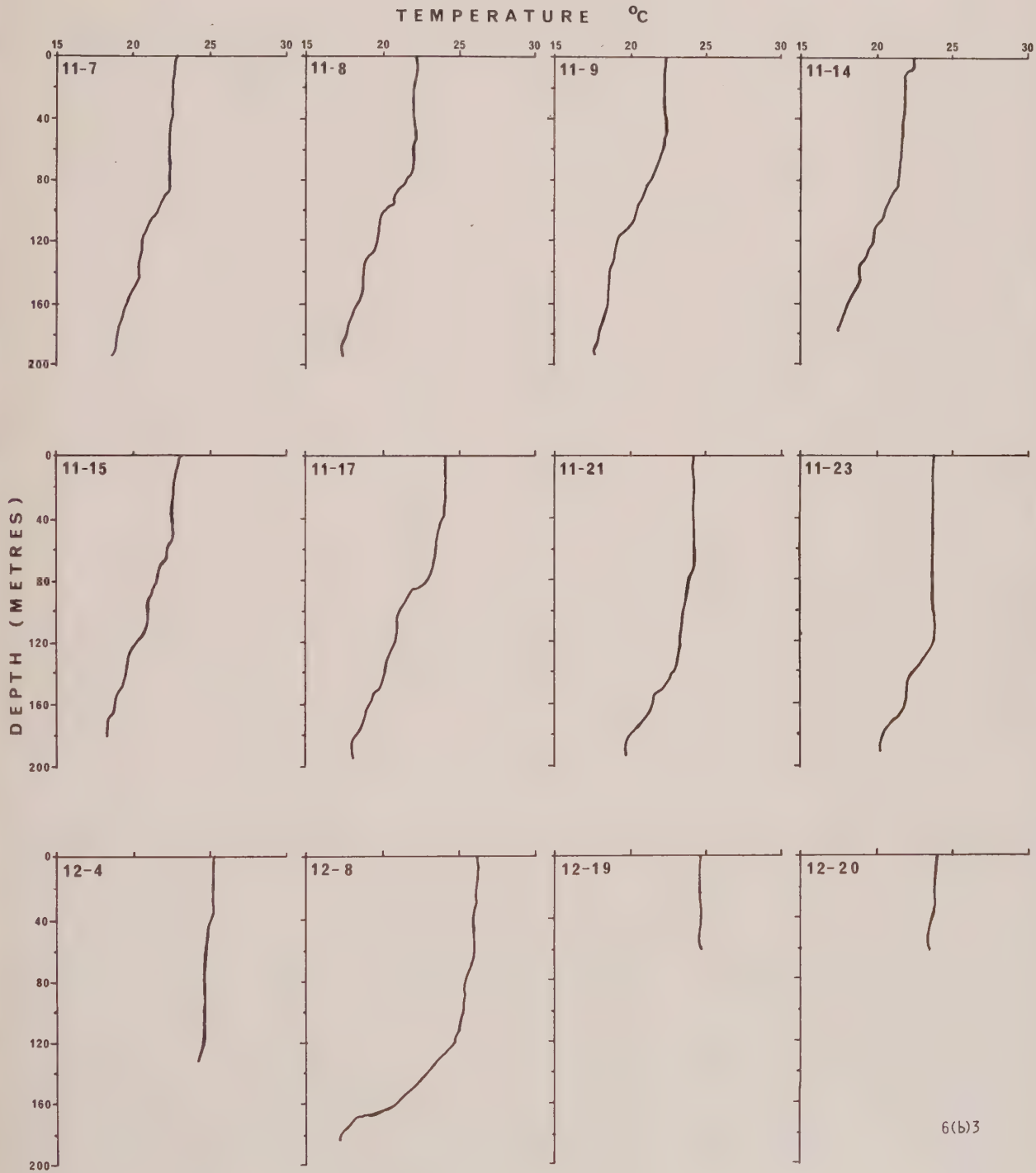
DEPTH (METRES)
6(b)2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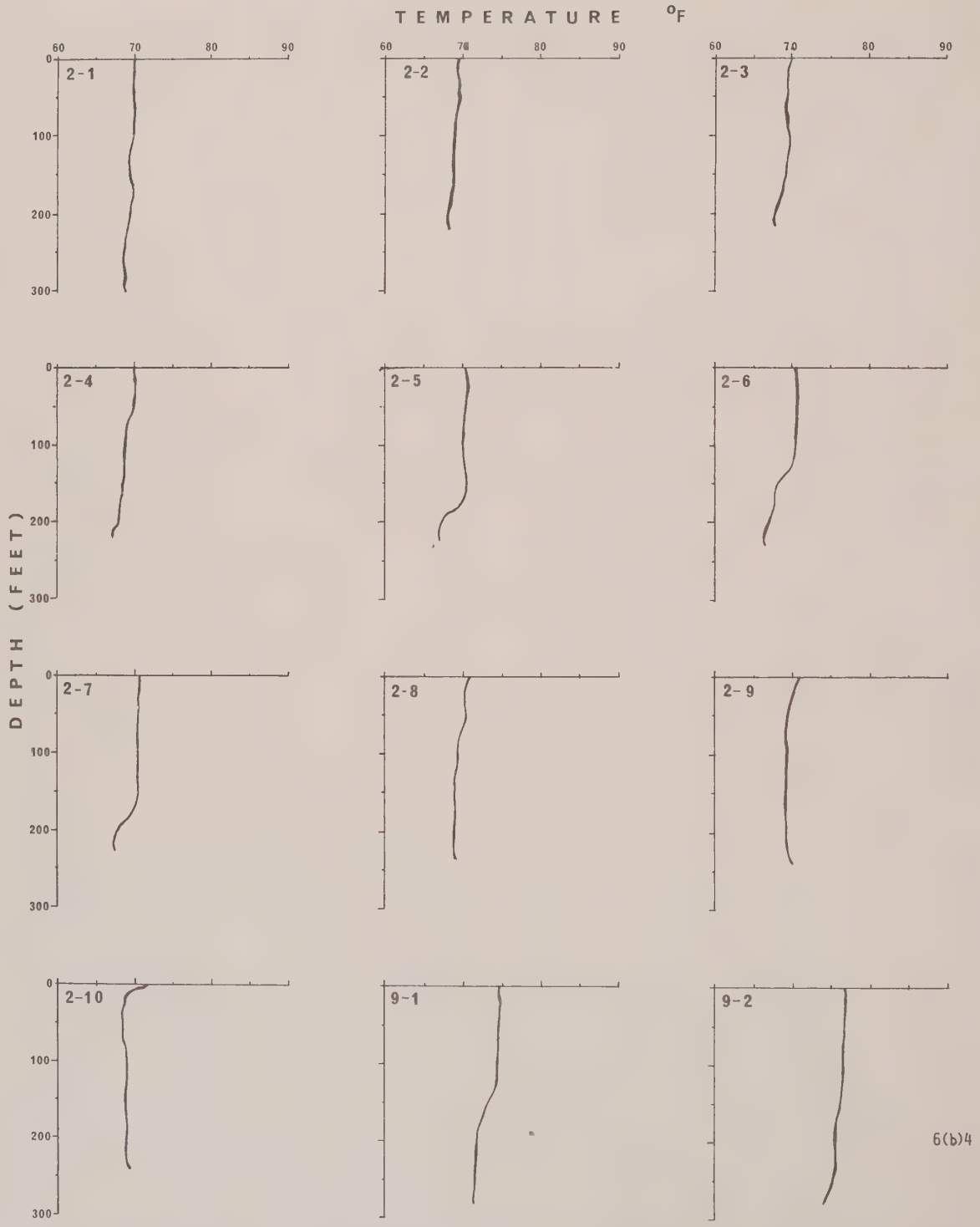
6(b)3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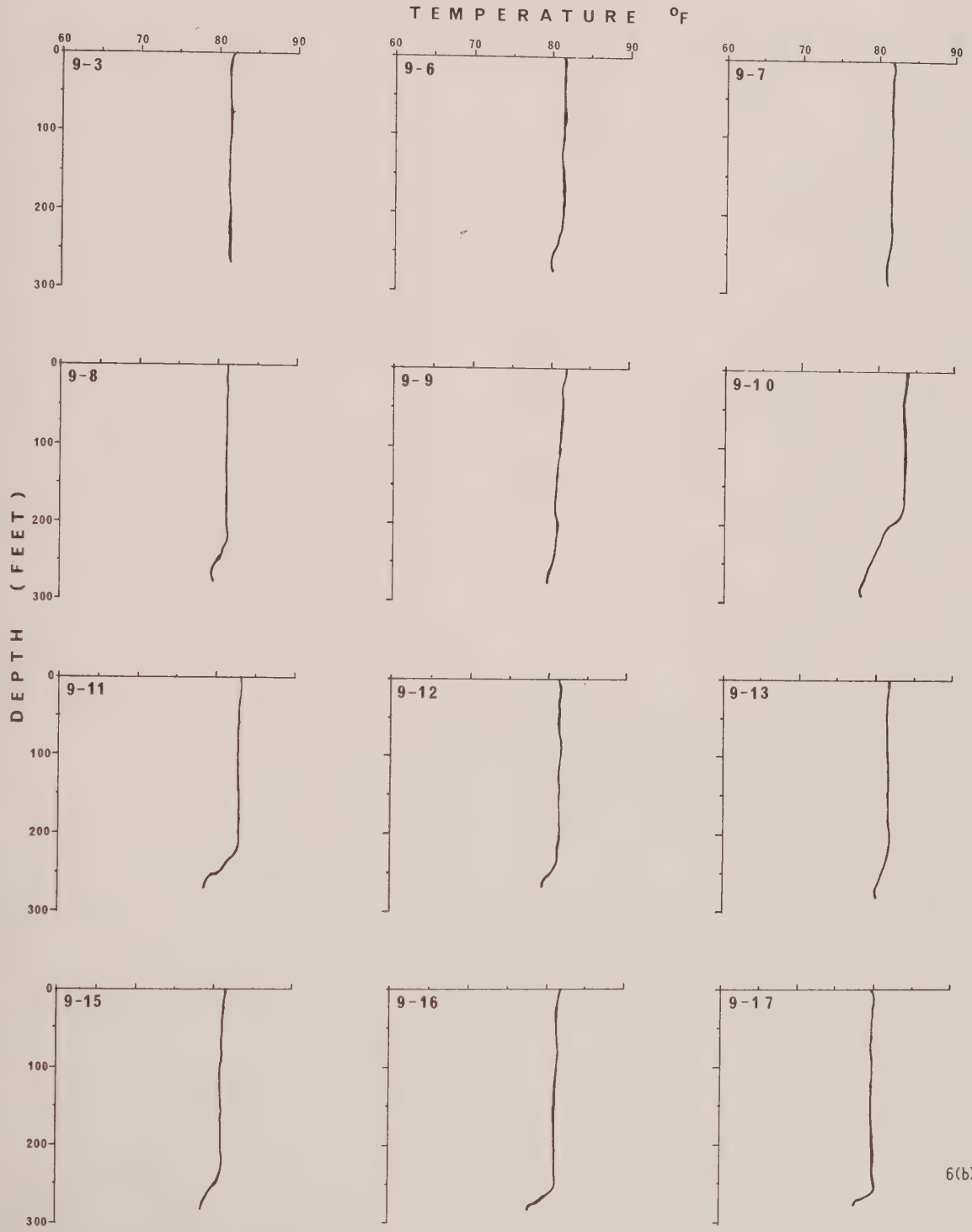
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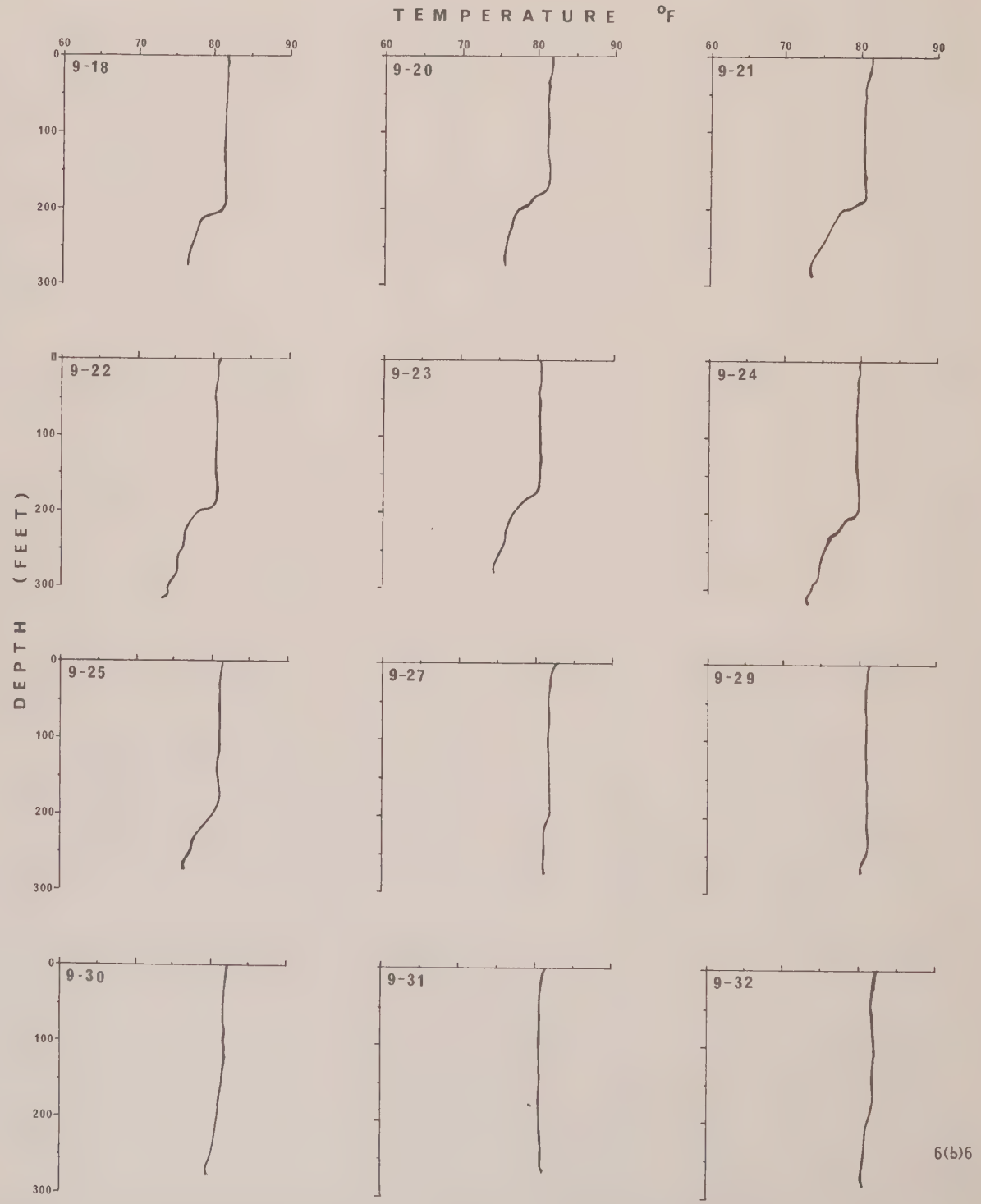
6(b)5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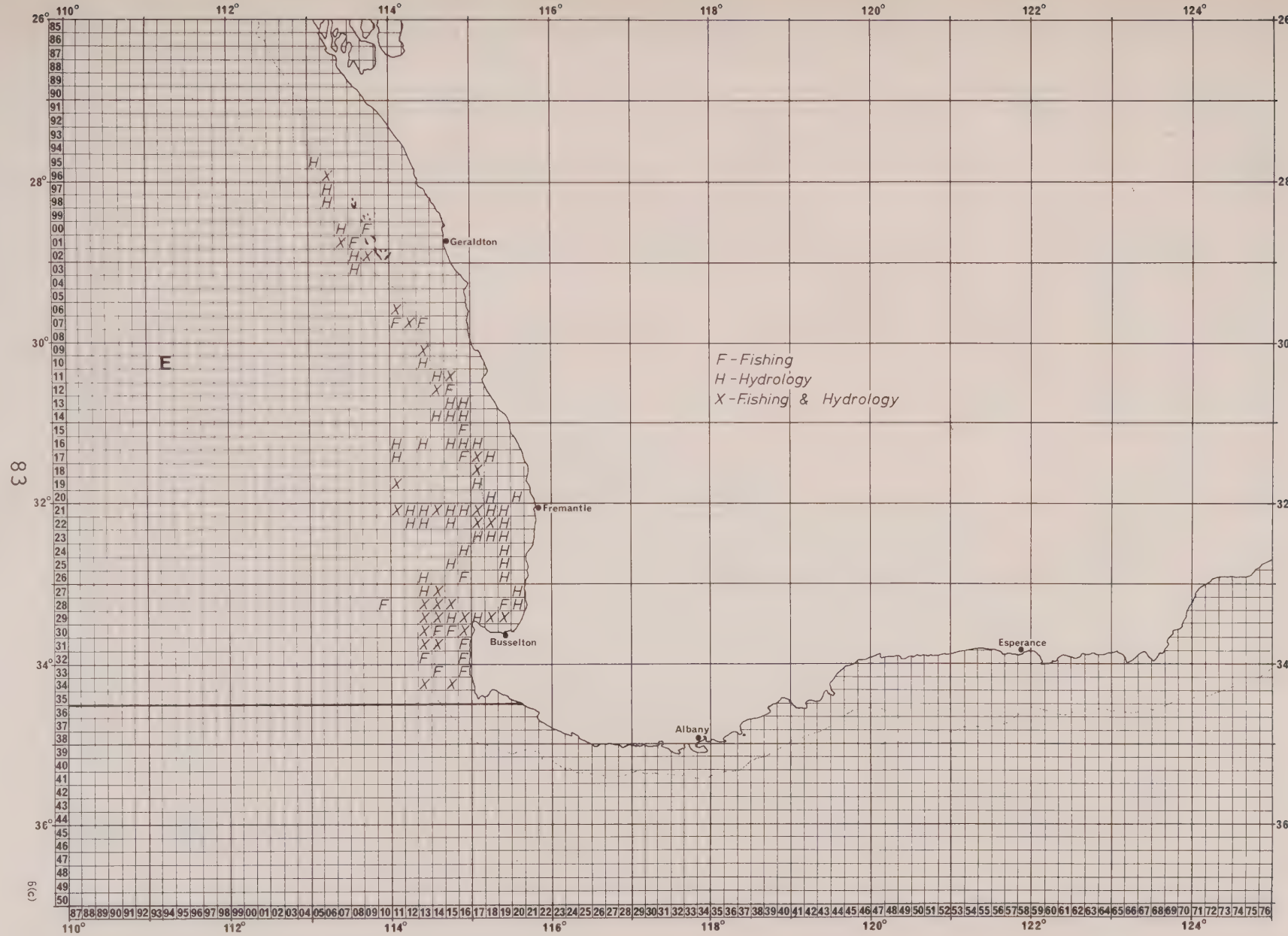
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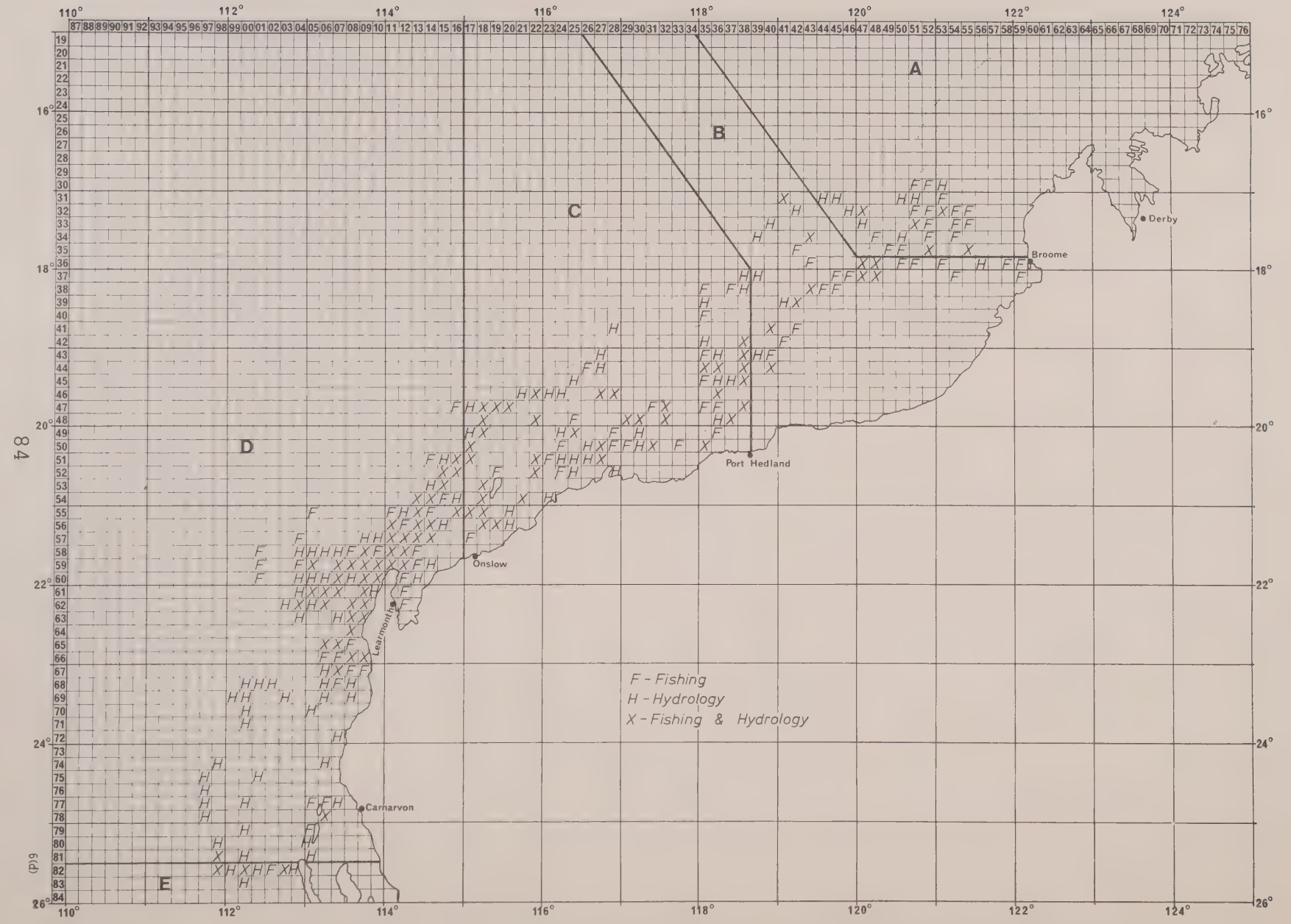
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Onslow
Learmonth
Carnarvon
F - Fishing
H - Hydrology
X - Fishing & Hydrology

6(d)

7. SUMMARY OF OBSERVATIONS - *WESTERN STAR* - CRUISE 1-12

	B.T.'s	SALINITY & TEMP.	PURSE SEINE SETS	FISH SCHOOLS SIGHTED	BAIT SCHOOLS SIGHTED	TUNA TROLLED	OTHER SPECIES TROLLED
AUG 73	1	-	-	3	1	2	-
SEP	7	-	2	72	2	9	5
OCT	10	-	3	66	0	22	-
NOV	-	-	-	-	-	-	-
DEC	-	-	-	-	-	-	-
JAN 74	14	12	-	9	0	3	-
FEB	18	16	1	3	2	23	-
MAR	10	48	-	13	23	17	1
APR	25	49	2	86	4	92	4
MAY	10	11	2	49	0	96	1
JUN	23	60	-	34	1	109	14
JUL	2	7	2	49	4	102	2
AUG	2	12	-	59	9	49	132
TOTAL	122	215	12	443	46	524	159

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